WEST VIRGINIA UNIVERSITY UNDERGRADUATE CATALOG 1967-1968

Lyle Herod

WEST VIRGINIA UNIVERSITY

The 1967-68 Undergraduate Catalog

West Virginia University Bulletin

CORRESPONDENCE

Correspondence should be addressed as follows:

ADMISSIONS
Director of Admissions

ALUMNI MATTERS
Director of Alumni Affairs

UNDERGRADUATE CATALOG, ANNOUNCEMENTS
Director of Admissions

EMPLOYMENT OF SENIORS AND ALUMNI
Placement Service Adviser

EXTENSION
Dean of Extension Services

HOUSING
Director of Housing

INFORMATION
Director of News and Information Services

RECORDS AND REGISTRATION
The Registrar

VETERANS AFFAIRS
The Veterans Coordinator

MATTERS OF GENERAL UNIVERSITY INTEREST
The President

WEST VIRGINIA UNIVERSITY
MORGANTOWN, W. VA. 26506

SERIES 67, NO. 12-1 — WEST VIRGINIA UNIVERSITY BULLETIN — JUNE, 1967

The *West Virginia University Bulletin* is issued Monday, Wednesday, and Friday throughout the year. Publications included are the *Announcements* of the College of Law, the Medical Center (the School of Dentistry, the School of Medicine, the School of Nursing, the School of Pharmacy, the Basic Sciences), the Graduate School, the Summer Session; this *Undergraduate Catalog* (College of Arts and Sciences; College of Agriculture and Forestry; College of Commerce; Creative Arts Center; College of Engineering; College of Human Resources and Education; School of Journalism; Division of Military Science and Division of Air Force Aerospace Studies; School of Mines; School of Physical Education); bulletins of the College of Engineering and the School of Mines; *Proceedings* of the West Virginia Academy of Science; *Victorian Poetry;* and other scholarly and scientific publications.

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West Virginia University

MORGANTOWN

ESTABLISHED FEBRUARY 7, 1867

The Board of Governors

	TERM EXPIRES
ALBERT B. C. BRAY, JR., *President,* Logan	1972
RALPH J. BEAN, *Vice-President,* Moorefield	1970
K. DOUGLAS BOWERS, *Secretary,* Beckley	1971
MRS. GILBERT S. BACHMANN, Wheeling	1973
PAT R. HAMILTON, Oak Hill	1968
THOMAS L. HARRIS, Parkersburg	1974
FORREST H. KIRKPATRICK, Wheeling	1975
JAMES H. SWADLEY, JR., Keyser	1967
CHARLES C. WISE, JR., Charleston	1969

HARRY B. HEFLIN, *Chief Executive Officer,* Morgantown

The Board of Governors has charge of the educational, administrative, financial, and business affairs of the University and Potomac State College of West Virginia University.

Administrative Officers

GENERAL

President, Harry Bruce Heflin, A.B., A.M., Ph.D., LL.D., (*Acting*) (1966), 1964.
Provost, Robert Ferguson Munn, A.B., M.A., Ph.D., (*Acting*) (1965), 1952.
Vice-President—Administration and Finance, Harry Bruce Heflin, A.B., A.M., Ph.D., LL.D., (1964).
Vice-President—Appalachian Center, Ernest Joseph Nesius, B.S.A., M.S.A., Ph.D., (1963), 1960.
Vice-President—Medical Center, Edward George Stuart, B.S., M.A., Ph.D., M.D., (1966), 1960.
Director of Student Educational Services, David Norman Hess, A.B., B.D., M.A., Ph.D., (1965), 1963.
Assistant to the President for Special Affairs, Emery Frank Bacon, B.A., M.A., (1965).
Director of Admissions and Assistant to the President, Earl Ruffner Boggs, A.B., M.A., Ph.D., (1965), 1960.
Director of University Relations, Harold Joseph Shamberger, A.B., M.P.A., (*Acting*), (1963), 1949.
Associate Director of Student Educational Services, Joseph Clay Gluck, B.A., B.D., (1965), 1943.
Registrar, Stanley Robert Harris, A.B., M.S., (1963), 1953.
Comptroller, William Hayward McMillion, B.S., M.S., (1965), 1952.
Director of Libraries, Robert Ferguson Munn, A.B., M.A., Ph.D., (1957), 1952.
Director of Alumni Affairs, David Wood Jacobs, A.B., (1938).
Director of Development, Donovan Hiner Bond, B.S.J., M.A., (1959), 1946.
Professor of Air Force Aerospace Studies, Col. Chaz M. Holland, B.B.A., M.B.A., M.A.Int.A., (1966).
Professor of Military Science, Col. Charles G. Ives, B.S., (1967), 1966.
Director of University Hospital, Eugene Leo Staples, B.S., M.H.A., (1960).
Director of Intercollegiate Athletics, Robert Nathan Brown, A.B., (1954), 1950.

COLLEGES AND SCHOOLS

Agriculture and Forestry, Robert Standish Dunbar, Jr., Ph.D., *Dean*, (1964), 1952.
Agricultural Experiment Station, A. H. VanLandingham, Ph.D., *Director*, (1959), 1929.
Arts and Sciences, Carl Maynard Frasure, Ph.D., *Dean*, (1961), 1927.
Commerce, Thomas Corwith Campbell, Jr., Ph.D., *Dean*, (1964), 1948.
Creative Arts Center, Richard Edward Duncan, Ph.D., *Dean and Director*, (1964), 1958.
Dentistry, Kenneth Vincent Randolph, D.D.S., *Dean*, (1958), 1957.
Engineering, Chester Abbo Arents, M.E., *Dean*, (1955).
Engineering Experiment Station, James Albert Kent, Ph.D., *Associate Director*, (1963), 1958.
Graduate, Robert Ferguson Munn, A.B., M.A., Ph.D., *Acting Dean*, (1965), 1952.
John Charles Ludlum, Ph.D., *Assistant Dean*, (1965), 1946.
Human Resources and Education, Stanley Oliver Ikenberry, Ph.D., *Dean*, (1965), 1962.
Journalism, Quintus Charles Wilson, Ph.D., *Dean*, (1961).
Law, Paul Lambert Selby, Jr., LL.B., *Dean*, (1964).
Medicine, Clark Kendall Sleeth, M.D., *Dean*, (1961), 1935.
Mines, Charles Thomas Holland, M.S.E.M., *Dean*, (1961), 1930.
Nursing, (Vacancy).
Pharmacy, Raphael Otto Bachmann, Ph.D., *Dean*, (1961).
Physical Education, Ray Oscar Duncan, Ed.D., *Dean*, (1952).

NOTE: The date in parentheses indicates year of latest appointment. The second date indicates year of first appointment to a University position.

HEADS OF OTHER ADMINISTRATIVE OFFICES

Biological Sciences, Institute of, EDWARD GEORGE STUART, PH.D., M.D., *Director*, (1964).
Book Store, RUTH ELEANOR ROBINSON, A.M., *Manager*, (1944), 1939.
Computer Center, ERNEST LEWIS JONES, M.A., *Director*, (1966), 1955.
Housing, ROBERT ALLEN ROBARDS, B.S.B.A., *Director*, (1965), 1960.
Nursing Service, AUDREY EDITH WINDEMUTH, M.S., *Director*, (1961), 1960.
Personnel, S. THOMAS SERPENTO, M.A., *Director*, (1964), 1960.
Physical Plant, VERGIL B. CLARK, M.S., *Director*, (1965).
Regional Research Institute, WILLIAM HENRY MIERNYK, PH.D., *Director*, (1965).
Residence Halls, AGNES BERDELIA HOVEE, M.A., *Director*, (1956), 1950.
Student Educational Services
- *Director*, DAVID NORMAN HESS, PH.D., (1965), 1963.
- *Associate Director*, JOSEPH CLAY GLUCK, A.B., B.D., (1965), 1943.
  - Counseling Service, JAMES FRANKLIN CARRUTH, PH.D., *Director*, (1965), 1953.
  - Foreign Student Coordinator, JULIAN WELDON MARTIN, B.S.CH.E., (1965), 1964.
  - Health Service, JOHN JOSEPH LAWLESS, PH.D., M.D., *Director*, (1965), 1935.
  - Mountainlair, ROBERT FRANCIS MCWHORTER, M.S., *Director*, (1965), 1959.
  - Placement Service, MARGARET CORNELIA LADWIG, PH.D., *Adviser*, (1965), 1949.
  - Residence Hall Programs and Dean of Women, BETTY BOYD, A.B., (1965), 1948.
  - Student Financial Aids, GORDON RUDOLPH THORN, M.A., (1965), 1957.
  - Student Programs, JAMES VERNE WATKINS, M.S., (1965), 1959.

University High School, DELMAS FERGUSON MILLER, PH.D., *Director*, (1960), 1949.
- E. GRANT NINE, M.S., *Principal*, (1960), 1956.

University Relations, HAROLD JOSEPH SHAMBERGER, M.P.A., *Acting Director*, (1963), 1949.
- Publications, JOHN LUCHOK, B.S.J., *Editor*, (1953), 1950.
- News and Information Services, JOHN LUCHOK, B.S.J., *Acting Director*, (1967), 1950.
- Radio, Television, and Motion Pictures, C. GREGORY VAN CAMP, M.S.J., *Director*, (1960).

West Virginia Center for Appalachian Studies and Development
- Cooperative Extension Service, ERNEST JOSEPH NESIUS, PH.D., *Director*, (1963), 1961.
- Continuing Education and Extended Credit Programs, KEITH ELDEN GLANCY, PH.D., *State Chairman*, (1965), 1959.
- Extension Services, ROMAN JOSEPH VERHAALEN, PH.D., *Dean*, (1964).
- Institute for Labor Studies, FREDERICK ANTHONY ZELLER, PH.D., *Director*, (1965).
- International Programs, RALPH E. NELSON, PH.D., *Director*, (1965), 1954.
- Kanawha Valley Graduate Center, BRUCE M. JOHN, M.S., *Director*, (1966), 1963.
- Parkersburg Center, BILLY LEE COFFINDAFFER, PH.D., *Dean*, (1966), 1950.
- Research and Development, Office of, ROBERT G. DYCK, M.C.P., *Acting Director*, (1965), 1963.

Standing Committees

THE UNIVERSITY

ADMISSIONS: Director of Admissions, the Registrar, and the Deans of all Colleges and schools admitting freshmen.

BOARD OF GOVERNORS SCHOLARSHIPS:

Undergraduate: F. J. Holter, C. W. Brown, J. C. Gluck, S. R. Harris, Rogers McAvoy, L. W. Welden, and Q. C. Wilson.

Graduate: F. J. Holter, S. E. Dadisman, G. O'C. Harvey, K. V. Randolph, and J. C. Stickney.

SPACE ALLOCATION: A. R. Collett, C. A. Arents, R. S. Dunbar, Jr., R. O. Duncan, V. B. Clark, S. R. Harris, W. H. McMillion, and C. R. Wagner.

DISCIPLINE: M. L. Vest, Mary C. Buswell, and R. F. Krause.

THE SENATE

Constitutional Committees

EXECUTIVE: Acting President Heflin, *Chairman;* E. B. Flink, M. E. Gallegly, D. F. Miller, J. H. Schaub, G. H. Stewart, J. R. Williams, and W. H. Baker, *Secretary.*

MEMBERSHIP AND CONSTITUENCIES: F. E. Lorince, Jr., *Chairman;* W. R. Biddington, R. W. Laird, W. R. Summers, Jr., C. P. Yost, and W. H. Baker (ex officio).

Standing Committees

TEACHER EVALUATION: W. M. Bagby, *Chairman;* J. D. Adams, G. C. Anderson, E. C. Barbe, Sara Ann Brown, Wincie Ann Carruth, Alan Donaldson, R. E. Foster, Emile Frere, A. F. Galli, Virginia P. Hagemann, F. J. Holter, A. N. Hofstetter, R. L. Jack, Mary Rose Jones, Mortimer Levine, D. R. Leyden, W. D. Lorensen, D. W. MacDowell, J. L. McBee, Betty L. Miller, D. F. Miller, L. L. Ourth, E. R. Page, M. E. Pool, E. W. Reynolds, Bernhard Scher, D. C. Shelton, R. D. Slonneger, N. S. Smith, Jr., Pauline F. Steele, W. V. Wagner, and W. H. Baker.

NEW COURSES AND COURSE CHANGES: H. A. Gibbard, *Chairman;* R. C. Bailie, O. J. Burger, R. G. Burrell, A. S. Pavlovic, and J. C. Ludlum (ex officio).

FACULTY WELFARE: A. F. Wojcik, *Chairman;* L. H. Brown, J. A. Jacobsohn, M. E. Pool, and F. E. Wright, II.

STUDENT INSTRUCTION: R. D. Slonneger, *Chairman;* H. E. Kidder, P. L. Selby, Jr., Robert Stilwell, K. A. Cook, and President of Student Body (ex officio).

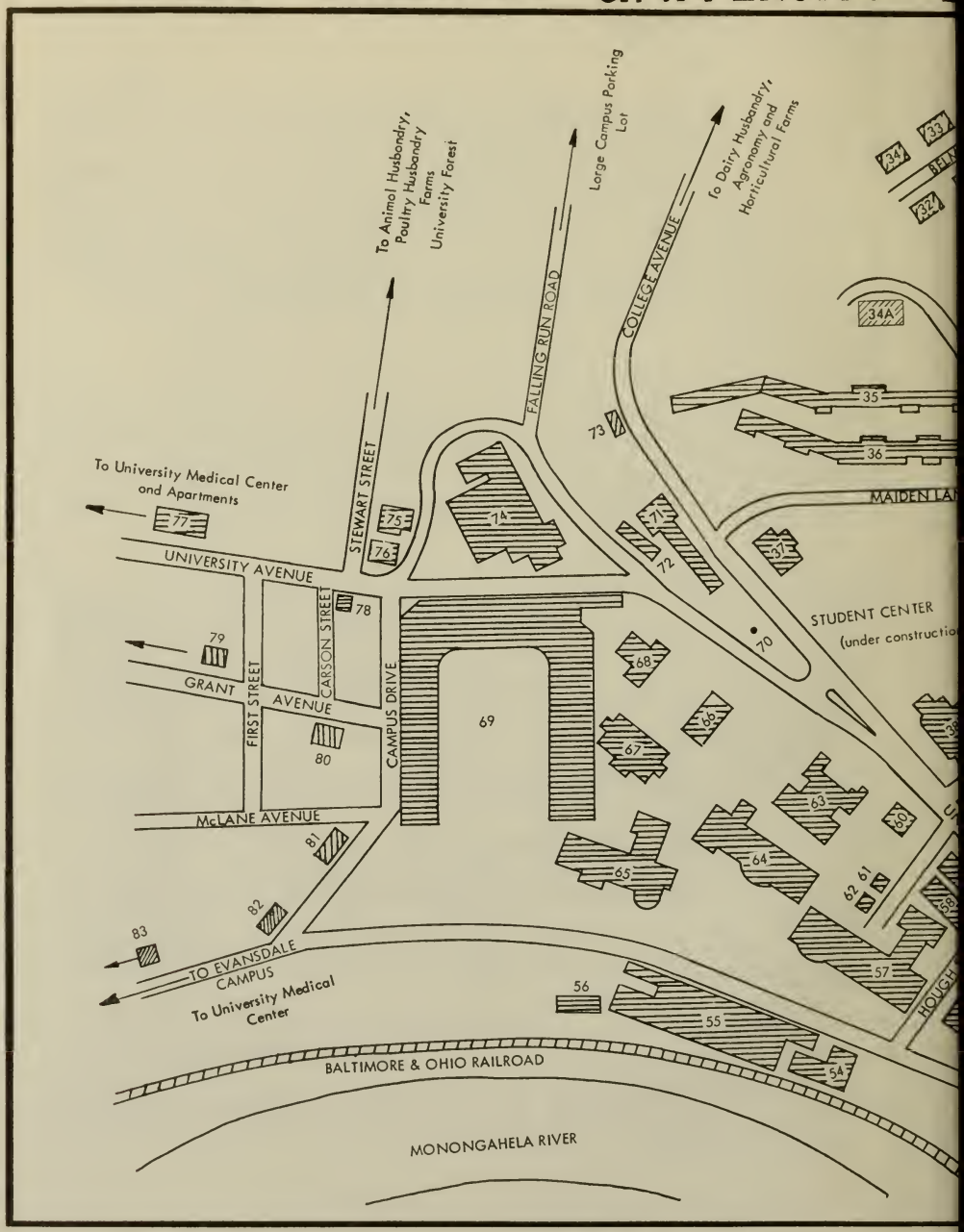
RESEARCH, RESEARCH GRANTS, AND PUBLICATIONS: A. D. Kenny, *Chairman;* J. H. Chapman, Jr., D. G. Temple, Valentin Ulrich, D. T. Worrell, and John Luchok (ex officio).

Special Committees

CALENDAR: Sam Boyd, Jr., *Chairman;* S. R. Harris, Peter Popovich, Barbara Jones, and T. J. Brennan.

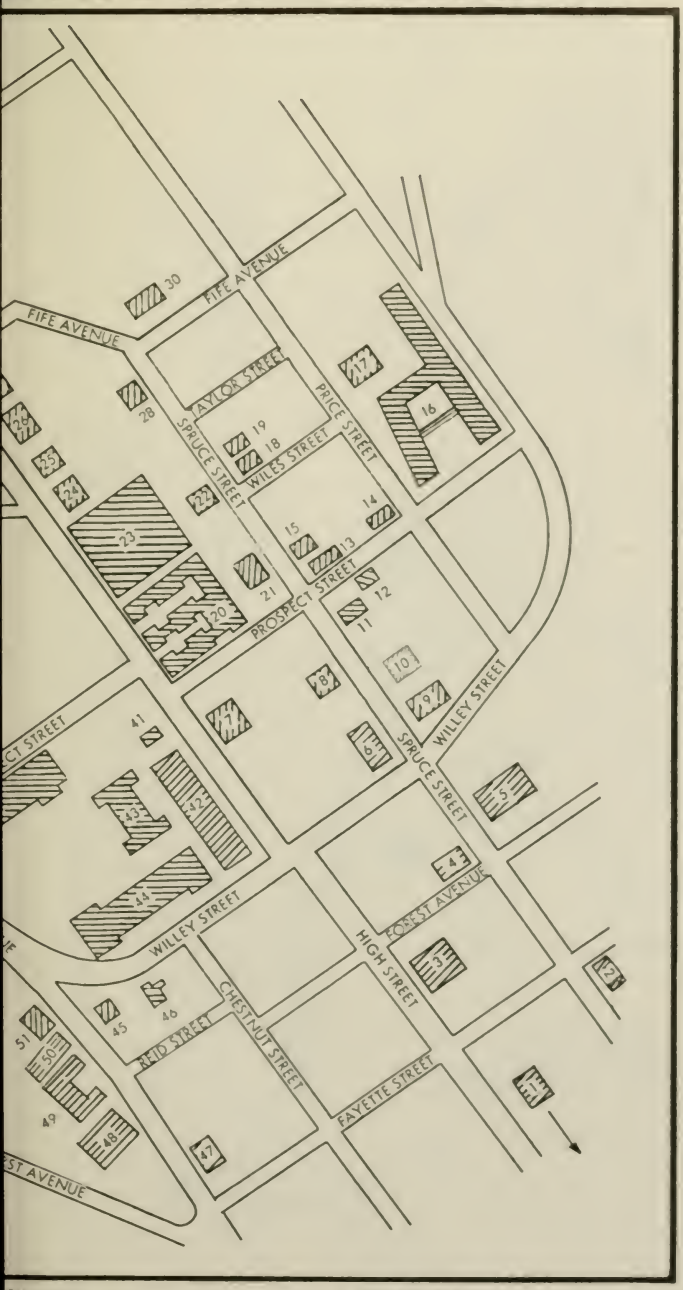
GRADUATE FACULTY-SENATE RELATIONSHIP: J. H. Schaub, *Chairman;* W. T. Doherty, Jr., H. C. Evans, D. J. Horvath, H. A. Lindsay, D. F. Miller, and V. J. Traynelis.

WEST VIRGINIA UNIVERSITY



1. Christian Church–Disciples Fellowship
2. Spruce Street Methodist Church
3. Baptist Church Student Fellowship
4. Greek Orthodox Church–Greek Orthodox Youth of America
5. Presbyterian Church–Westminister Faundation
6. Episcopal Church–Canterbury Association
7. Chi Omega Sorority
8. Phi Kappa Sigma Fraternity

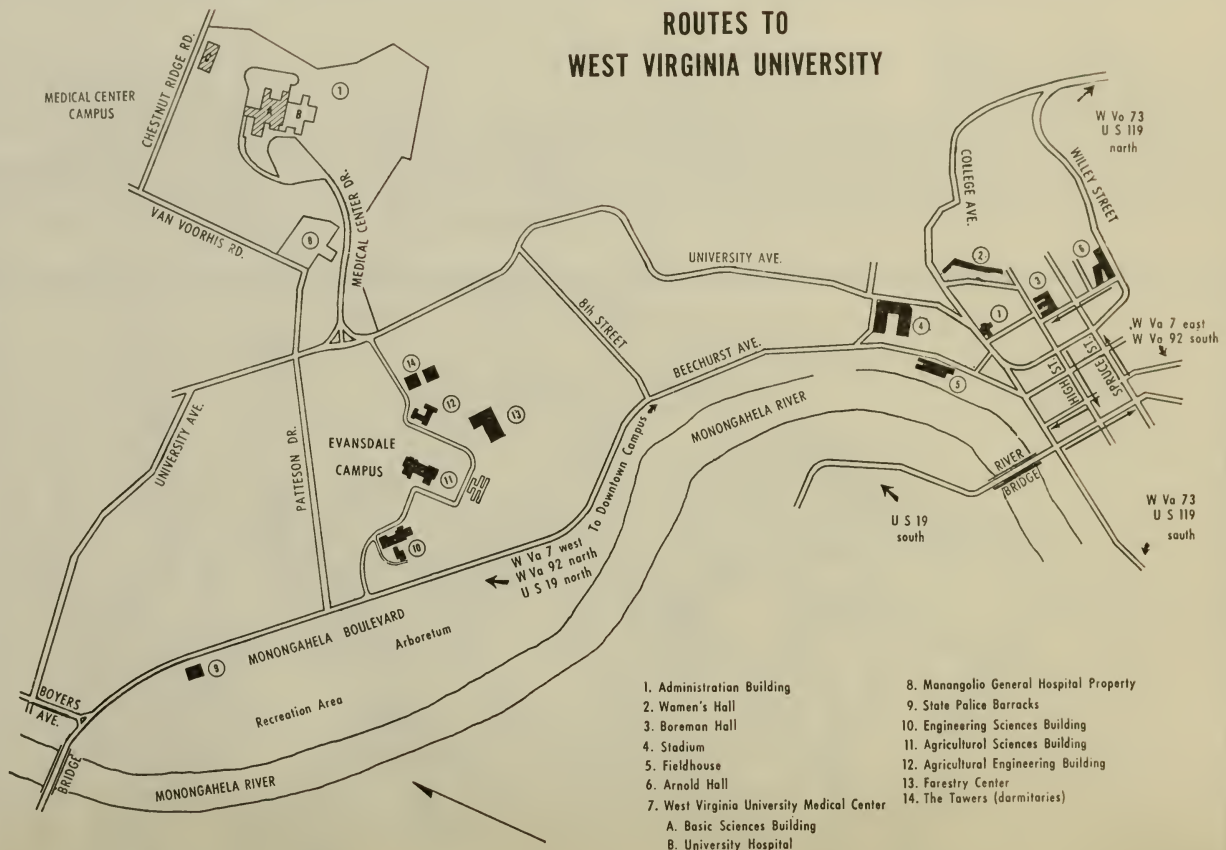
WNTOWN CAMPUS



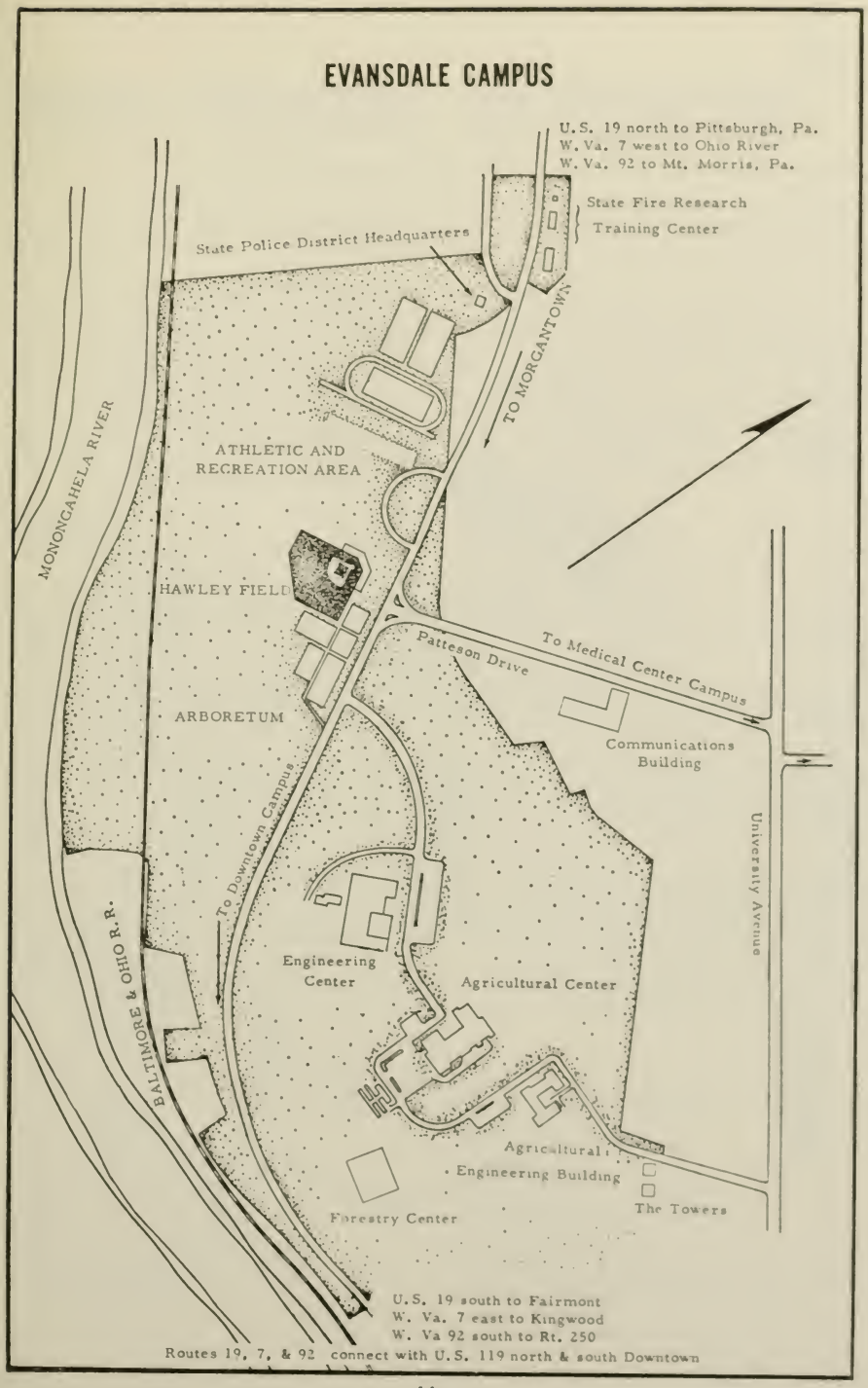
Phi Sorority
Delta Sorority
uce Street
aspect Street
Kappa Gamma Sorority

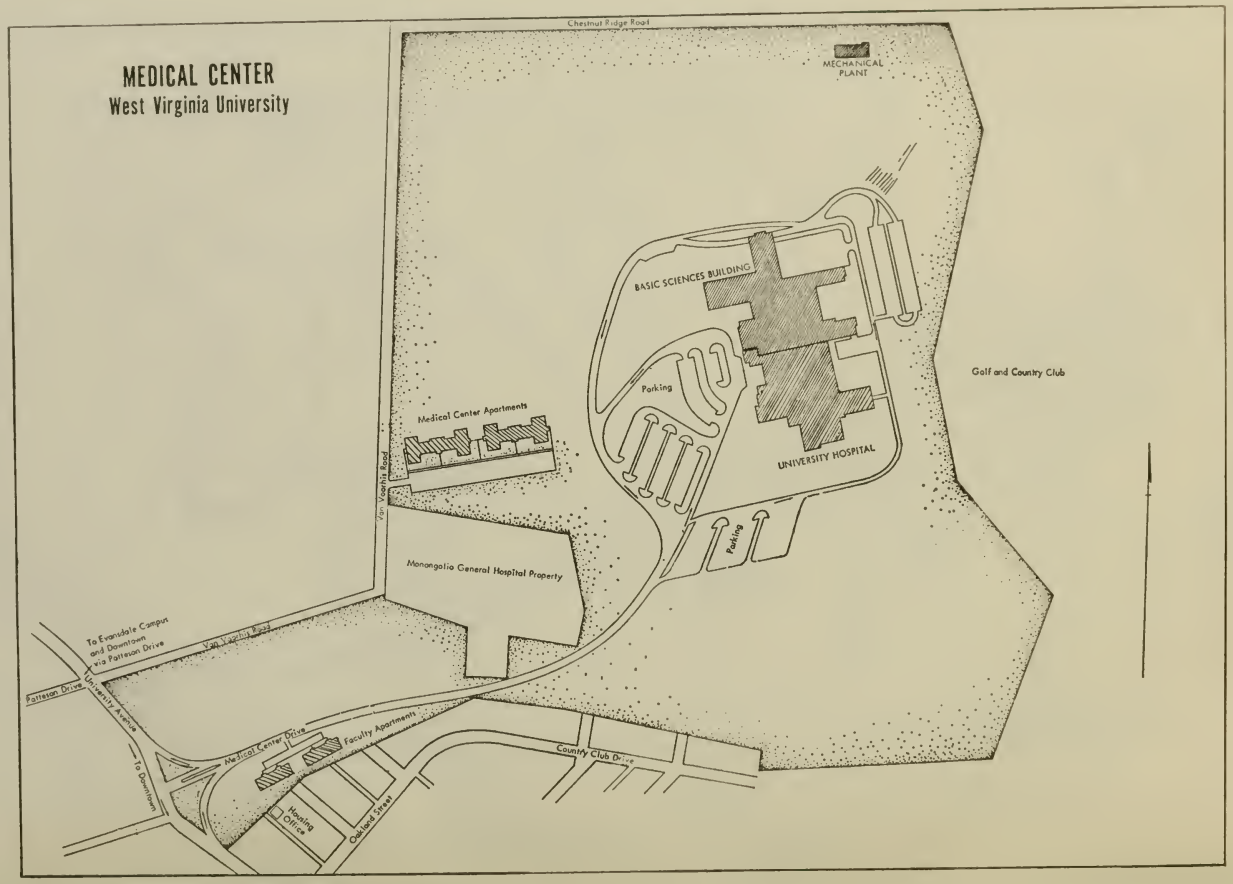
14. Alpha Delta Pi Sorority
15. Alpha Xi Delta Sorority
16. Arnold Hall and Arnold Apartments
17. Delta Gamma Sorority
18. Delta Delta Delta Sorority
19. Alpha Phi Delta Fraternity
20. Boreman Hall–South
21. Gamma Phi Beta Sorority
22. Theta Chi Fraternity
23. Boreman Hall–North
24. Delta Tau Delta Fraternity
25. Kappa Alpha Fraternity
26. Phi Sigma Kappa Fraternity
27. Tau Kappa Epsilon Fraternity
28. Phi Sigma Delta Fraternity
29. Sigma Chi Fraternity
30. Phi Kappa Psi Fraternity
31. Sigma Nu Fraternity
32. Kappa Sigma Fraternity
33. Beta Theta Pi Fraternity
34. Phi Delta Theta Fraternity
34A. Sigma Phi Epsilon Fraternity
35. Terrace Hall
36. Women's Hall
37. Health Center
38. Administration Building
39. Computer Center
40. Chemistry Building
41. Social Work Office
42. Methodist Church–Wesley Foundation
43. Library
44. Mineral Industries Building
45. Personnel Office
46. 128 Willey Street
47. Jewish Youth Center–Hillel Foundation
48. St. Theresa's Catholic Church
49. Newman Club (Catholic youth group)
50. St. John's Chapel
51. Pi Beta Phi Sorority
52. Music Building
53. Music Annex and Lutheran Student Association
54. Industrial Arts
55. Field House
56. Heating Plant
57. Physics Building
58. Bookstore
59. Law Building
60. 1549 University Avenue
61. Counseling Center
62. Placement Office
63. Elizabeth Moore Hall
64. Armstrong Hall
65. Brooks Hall
66. Martin Hall
67. Woodburn Hall
68. Science Hall
69. Mountaineer Field
70. Memorial Plaza (U.S.S. W.Va.)
71. Oglebay Hall
72. Oglebay Hall Annex
73. 721 College Avenue
74. Mountainlair
75. Plant Pathology Greenhouse
76. "Old" Forestry Building
77. Evangelical United Brethren Church–Student Youth Fellowship
78. Industrial Arts Annex
79. Alpha Gamma Rho Fraternity
80. Lambda Chi Alpha Fraternity
81. Pi Kappa Alpha Fraternity
82. Nursery School
83. St. Paul Lutheran Church (Patteson Drive)

ROUTES TO WEST VIRGINIA UNIVERSITY



1. Administration Building
2. Women's Hall
3. Boreman Hall
4. Stadium
5. Fieldhouse
6. Arnold Hall
7. West Virginia University Medical Center
   A. Basic Sciences Building
   B. University Hospital
   C. Mechanical Plant
8. Monongalia General Hospital Property
9. State Police Barracks
10. Engineering Sciences Building
11. Agricultural Sciences Building
12. Agricultural Engineering Building
13. Forestry Center
14. The Towers (dormitories)


EVANSDALE CAMPUS
U.S. 19 north to Pittsburgh, Pa.
W. Va. 7 west to Ohio River
W. Va. 92 to Mt. Morris, Pa.
State Fire Research
Training Center
State Police District Headquarters
TO MORGANTOWN
MONONGAHELA RIVER
ATHLETIC AND
RECREATION AREA
HAWLEY FIELD
Patteson Drive
To Medical Center Campus
ARBORETUM
Communications
Building
To Downtown Campus
University Avenue
Engineering
Center
Agricultural Center
BALTIMORE & OHIO R.R.
Agricultural
Engineering Building
The Towers
Forestry Center
U.S. 19 south to Fairmont
W. Va. 7 east to Kingwood
W. Va 92 south to Rt. 250
Routes 19, 7, & 92 connect with U.S. 119 north & south Downtown


MEDICAL CENTER
West Virginia University
Chestnut Ridge Road
MECHANICAL PLANT
BASIC SCIENCES BUILDING
Parking
UNIVERSITY HOSPITAL
Parking
Golf and Country Club
Medical Center Apartments
Van Voorhis Road
Monongalia General Hospital Property
To Evansdale Campus and Downtown via Patteson Drive
Van Voorhis Road
Patteson Drive
University Avenue
To Downtown
Medical Center Drive
Faculty Apartments
Housing Office
Oakland Street
Country Club Drive

Part I

History, Description, and Organization

West Virginia University, founded February 7, 1867, celebrates its centennial year at a time of growth of its student body, faculties and staff, expansion of physical plant, and redirection and reform of its objectives and programs unprecedented in its history.

West Virginia University combines in a single institution the functions of a state and of a state land-grant university—functions commonly assigned to two or more institutions in other state settings. Hence, the range and variety of instructional, research, and service programs at West Virginia University is greater than that of most institutions its size. The *primary* mission of the University within the West Virginia system of higher education is to serve as the major center of professional and graduate training and research in the State. The rapid movement of the University in this direction is reflected in the fact that, during the decade 1954-55 to 1964-65, University undergraduate enrollment rose by one-half while graduate and professional school enrollments more than doubled.

History

The University had its origin in the Morrill Act of July 2, 1862, and in an act of the 1863 State legislature accepting the provisions of that act.

On January 9, 1866, trustees of the Monongalia Academy in Morgantown offered the State all of its property, including the site of Woodburn Female Seminary, on condition that the new institution be located there.

The offer was accepted and on February 7, 1867, the Agricultural College of West Virginia was established. The following year, President Alexander Martin succeeded in persuading the legislature to change the name of the institution to West Virginia University.

During the institution's early years, its supporters were divided on whether it should be a "state-supported university" or a "first-class state-supported college." The university concept won out in 1895, when President James L. Goodknight organized a College of Engineering and Mechanic Arts, a College of Arts and Sciences, a College of Law, and a College of Agriculture.

The major academic divisions of the University today are: the College of Agriculture and Forestry; the College of Arts and Sciences; the College of Commerce; the Creative Arts Center; the School of Dentistry; the College of Engineering; the Graduate School; the College of Human Resources and Education; the School of Journalism; the College of Law; the School of Medicine; the Division of Military Science and the Division of Air Force Aerospace Studies; the School of Mines; the School of Nursing; the School of Pharmacy; and the School of Physical Education.

PRESIDENTS OF THE UNIVERSITY

The University has had fifteen regular presidents, eleven acting presidents, and one chairman of the faculty. Together, with their periods of service:

Alexander Martin
Apr. 3, 1867-Aug. 12, 1875
John Work Scott, *Vice-President*
Sept. 6, 1875-Mar. 27, 1877 (*acting*)
John Rhey Thompson
Mar. 28, 1877-Mar. 12, 1881
Daniel Boardman Purinton
Vice-President
March 13, 1881-1882 (*acting*)
William Lyne Wilson
1882-1883
Robert Carter Berkeley
Chairman of the Faculty
1883-1885
Eli Marsh Turner
1885-July 21, 1893
Powell Benton Reynolds
Vice-President
July 24, 1893-1895 (*acting*)

James L. Goodknight
1895-Aug. 6, 1897
(from Aug. 6-19, 1897, vice-president Robert Allen Armstrong was nominally acting president)
Jerome Hall Raymond
Aug. 10, 1897-1901
Powell Benton Reynolds
Mar. 21-July 31, 1901 (*acting*)
Daniel Boardman Purinton
Aug. 1, 1901-July 31, 1911
Alexander R. Whitehill
Aug. 1, 1911-Sept. 30, 1911 (*acting*)
Thomas Edward Hodges
Oct., 1911-Aug. 31, 1914
Frank Butler Trotter
July 9, 1914-1916 (*acting*)
1916-1928
John Roscoe Turner
1928-Dec. 31, 1934
Robert Allen Armstrong
Jan. 1-Sept. 30, 1935 (*acting*)
Chauncey Samuel Boucher
Oct. 1, 1935-Aug. 31, 1938
Charles Elmer Lawall
Sept. 1, 1938-1939 (*acting*)
1939-Aug. 31, 1945
Charles Thompson Neff, Jr.
Sept. 1, 1945-1946 (*acting*)
Irvin Stewart
1946-Aug. 25, 1958
Clyde Lemuel Colson
Aug. 26, 1958-Jan. 31, 1959 (*acting*)
Elvis Jacob Stahr, Jr.
Feb. 1, 1959-Jan. 25, 1961
Clyde Lemuel Colson
Jan. 26-Dec. 31, 1961 (*acting*)
Paul Ausborn Miller
Jan. 1, 1962-Aug. 15, 1966
Harry Bruce Heflin
Aug. 16, 1966— (*acting*)

Description

LOCATIONAL CHARACTERISTICS

Morgantown is a city of 25,000 population, although together with suburban communities, its metropolitan area population is estimated at 40,000. The major growth of Morgantown took place in the 1920's, based on the coal-mining industry. In the 1960's coal mining remains a major industry in the environs of the town, but, with mechanization of its operations, it now accounts for only 10 per cent of the labor force. Meanwhile, education and ancillary services have taken the coal industry's place as the principal source of local employment. West Virginia University itself is by far the largest single employer, accounting for some 20 per cent of Monongalia County employment.

Located on the east bank of the Monongahela River, which flows north to Pittsburgh, Morgantown is situated on rugged terrain of the Appalachian Highlands resulting from erosion of the Appalachian Plateau. The altitude of the city varies from 800 to 1,150 feet above sea level, while the hills of the environs rise eastward to Chestnut Ridge which has altitudes of 2,600 feet just 10 miles from the city. Average temperature the year round is 50.6 degrees, with a summer average of 69.8 and a winter average of 25.3. Average annual rainfall is 40.61 inches. Morgantown's climate may therefore be described as temperate, with some features of a mountain environment.

Morgantown is served by bus and by air but not by passenger trains. Lake Central Airlines provides direct air service from and to Charleston, the state capital, and Wheeling, Pittsburgh, Washington, D.C., Columbus, Cincinnati, and Indianapolis.

A limousine service to Grafton, 25 miles from Morgantown, connects with the few Baltimore & Ohio Railroad passenger trains.

U.S. Routes 19 and 119 pass through Morgantown in the north-south direction. Pittsburgh is 72 miles due north, while the cities of Charleston, W. Va., Washington, Baltimore, Cleveland, and Columbus, Ohio, all lie from 200 to 220 miles distant. A north-south interstate highway, I-79, is being constructed to pass just west of Morgantown.

There are two State facilities in the immediate vicinity of Morgantown. Mont Chateau State Park and Lodge is in a fine setting overlooking Cheat Lake. It affords restaurant and overnight lodging and conference facilities. Visitors to the park have such recreational options as swimming, boating, water skiing and fishing in Cheat Lake, hiking and horseback riding on mountain trails, and winter sports. Cooper's Rock State Forest affords a camping facility, a beautiful picnic and hiking area, a trout fishing pond which is regularly stocked, and spectacular views over the Cheat River Valley. These preserves are reached by West Virginia Route 73 (north). Cheat

Lake is about 5 miles from the center of Morgantown, and the Cooper's Rock parking area about 7 miles farther.

PHYSICAL PLANT

The campuses of West Virginia University cover some 600 acres, including 75 acres of the Downtown Campus near the center of Morgantown; 275 acres at Evansdale, a half-mile north of the Downtown Campus; and 260 acres in the Medical Center area. The University also has more than 11,000 acres of experimental farms and forests and educational camps located in many parts of the State.

Some of the main buildings, together with dates of their original construction or acquisition, follow:

Martin Hall, 1870; Woodburn Hall, 1876; Science Hall, 1893; Administration Building, 1902; Oglebay Hall, 1918; Women's Hall, 1919; Law Building, 1923; Mountaineer Field, 1925; Chemistry Building, 1925; Elizabeth Moore Hall, 1928, Field House, 1929; Main Library, 1931; University High School, 1933; Boreman Hall, 1935; Mineral Industries Building, 1942; Terrace Hall, 1942; Health Center, 1942; "Old" Forestry Building, 1946; Mountainlair, 1948; Armstrong Hall, 1950; Brooks Hall, 1951; Physics Building, 1952; Music Building, 1954; Arnold Hall, 1957; Basic Sciences Building—Medical Center, 1957; Book Store Building, 1958; Boreman Hall North, 1959; University Hospital, 1959; Engineering Sciences Building, 1961; Agricultural Sciences Building, 1961; Agricultural Engineering Building, 1961; Medical Center Apartments, 1961; an addition to Arnold Hall, 1961; three apartment buildings for married students at College Park, 1962, and four in 1963; Forestry Building, 1965; and the Evansdale Tower dormitories, 1965.

In addition the University owns and operates experimental dairy, horticulture, animal husbandry, agronomy, and poultry farms in Monongalia County; and other farms at Kearneysville, Jefferson County; Wardensville, Hardy County; Reedsville, Preston County; and Point Pleasant, Mason County. Also the Tygart Valley Experimental Forest, Randolph County; and West Virginia University Forest, at Cooper's Rock, near Morgantown.

Area Appalachian Center headquarters, in addition to one in Morgantown, are in Beckley, Charleston (Institute), Jackson's Mill, Keyser, and Parkersburg, and there are county offices throughout the State. Camp Arthur Wood, a forestry and geology camp, was obtained in 1948 at Alvon, near White Sulphur Springs, Greenbrier County, and the Terra Alta Biological Station in 1950. A 100-acre Arboretum, containing almost every plant and flower native to West Virginia, is open to visitors at the Evansdale Campus.

ACADEMIC UNITS ON THE TOWN CAMPUS

The expressions "Downtown Campus," "Main Campus," and "Town Campus" are often used interchangeably to refer to that part of the university located closest to the Morgantown commercial district. This was the original campus of the university and while the expansion of the Medical Center and the Evansdale complex has reduced the number of academic units located on the Town Campus, it continues to be regarded as the center of university life.

In addition to the Main Library, most departments of the basic academic disciplines are located in Town Campus buildings. Among these are the biological and physical sciences with departments located in Brooks Hall (Biology), the Mineral Industries Building (Geology and the School of Mines), the Physics Building (which also houses Mathematics), and the Chemistry Building.

The offices of the Dean of the College of Arts and Sciences are located in Woodburn Hall, one of three buildings that face on Woodburn Circle. Other colleges and schools on the Town Campus include the College of Commerce (Armstrong Hall), the School of Journalism (Martin Hall), the College of Law (Law Building), and the College of Human Resources and Education (Oglebay Hall). The latter school is scheduled to occupy new quarters in a five-story addition to the Forestry Building on the Evansdale Campus when construction is completed in 1968. Construction for the new Creative Arts Center should also be completed in the late 1960's, and the divisions of Art, Drama and Music will also be relocated in Evansdale. The effects of these changes has been the steady transformation of Town Campus buildings into general classroom and laboratory spaces serving the students

of several colleges and schools instead of buildings dedicated to a single academic discipline. This transformation is consistent with the space needs of the Core Curriculum for lower-division students and assures better utilization of existing educational facilities on the Town Campus.

Many student service and recreational facilities are located on the Town Campus, highlighted by the new Mountainlair which will be completed in 1967 at a cost of $6.5 million. Elizabeth Moore Hall is the women's social and physical education building which provides a gracious setting for many campus receptions and social events. A swimming pool is located in the "old" Mountainlair building and the facilities of the Field House provide an outlet for a wide variety of athletic and recreational activities. These facilities complement the interests of some 1,600 undergraduates housed in university residence halls on the Town Campus, plus those students who live in fraternity or sorority houses or private modern dormitories located on or adjacent to the Town Campus.

ACADEMIC UNITS ON THE EVANSDALE CAMPUS

The University's Evansdale Campus is the site of the Engineering Sciences, Agricultural Sciences, Agricultural Engineering, and Forestry buildings. The former three buildings were put into service in 1961 and are helping the College of Agriculture and Forestry and the College of Engineering to improve their teaching and research programs to keep pace with modern technology and provide services demanded by today's industry and agriculture.

The Forestry Building was opened for use in September, 1965. It is designed to accommodate an enrollment of 400 undergraduate and 50 graduate students. The three-story building provides 100,000 square feet of space—about four times as much as the "old" Forestry Building on the Downtown Campus. The building provides the State, for the first time, with adequate laboratory facilities for research in many areas of forestry that have long been neglected. The University's high-level irradiation facility is in the Forestry Building.

The Engineering Sciences Building consists of an 11-story tower on a 3-story base. A nearby structure houses subsonic and supersonic wind tunnels and a propulsion laboratory for Aerospace Engineering.

The three-story Agricultural Sciences Building houses all agricultural departments except Plant Pathology, Bacteriology, and Entomology (Brooks Hall), and Agricultural Engineering. The Department of Agricultural Engineering has its own building at Evansdale, near the Forestry Building and the Agricultural Sciences Building. Also located nearby are modern horticultural greenhouses.

The new Tower dormitories, with space for 900 students, were first occupied in September, 1965.

The Office of Publications, formerly housed in the basement of Woodburn Hall, was moved in January, 1965, to quarters on Patteson Drive in the Communications Building.

Most of the University's future physical growth will take place in the Evansdale and Medical Center campus areas.

MEDICAL CENTER

The University's Medical Center is a unique institution in West Virginia, offering teaching, research, and service programs in the health professions and sciences not duplicated elsewhere in the State. More than 2,000 persons are involved in this threefold purpose of teaching, research, and service—including faculty, staff, and student body.

Four schools (Dentistry, Medicine, Nursing, and Pharmacy) are located at the Medical Center. A major part of the facility is the West Virginia University Hospital, a State-wide referral center for diagnostic and treatment services for patients with difficult medical problems.

Educational programs are offered in the four professional schools and in Medical Technology, Dental Hygiene, and five masters' and doctors' degree programs in the basic sciences. These are Anatomy, Biochemistry, Microbiology, Physiology, and Pharmacology. In connection with the Schools of Medicine and Dentistry and University Hospital, several internship and residency programs are offered.

Health sciences research programs at the Medical Center are diverse and involve every school, department, division, and University Hospital. Support currently amounts to $2.5 million, most of which comes from the National Institutes of Health of the U.S. Public Health Service. Private West Virginia organizations, such as the State Heart Association, State Cancer Society, and the State TB and Health Association, support research projects. The most active areas of investigation are in heart and major blood vessel diseases, cancer (including leukemia), problems of metabolism, and problems of oxygen supply to the central nervous system.

The service programs are concentrated in the School of Dentistry clinic, in the University Hospital inpatient facilities, outpatient clinic, and emergency room. All patients are referred to University Hospital by family and community physicians. The hospital capacity is 520 beds—431 of which are now commissioned and available.

Postgraduate education at the Medical Center and in cities and towns of West Virginia is a growing part of its educational activity. In the past year, ten postgraduate educational programs for practitioners in dentistry, medicine, and pharmacy were held at the Medical Center.

The Medical Center teaching, research, and service programs are directed by a vice-president of the University.

The Medical Center Campus now includes six buildings: a coal-burning heating plant; the large 950-foot long main building called the "Medical Center" which is actually two buildings joined—the Basic Sciences Building and the University Hospital; two apartment buildings for married faculty; and two larger apartment buildings for graduate students, faculty, and staff. The University is acquiring the Morgantown Golf and Country Club. This land adjoins the Medical Center Campus and will assure even more space for orderly growth of the Evansdale-Medical Center campuses.

APPALACHIAN CENTER

The pioneers in the land-grant movement intended to establish institutions through which knowledge and learning could be made an effective part of the daily lives of the American people.

The University works toward this goal through its many extension activities, which are available to everyone in the State.

With the establishment of the West Virginia Center for Appalachian Studies and Development, the University has brought a new approach to education in West Virginia. In the Appalachian Center are mobilized into one coordinated, yet flexible, effort all special public service skills—extension, consulting, research, planning—directed to the development and improvement of the State and region. Its activities and resources are focused on developing peoples' attitudes, utilizing human and natural resources, assisting private and public organizations and institutions, and participating in internal affairs.

The program units of the Appalachian Center include the Office of Research and Development; the Cooperative Extension Service; University Extension and Continuing Education; Institute for Labor Studies; Mining and Industrial Extension Service; International Programs; Parkersburg Center of West Virginia University, and the Kanawha Valley Graduate Center of West Virginia University. The directors of the latter three units and of extension instruction for academic credit also have reporting responsibilities to the Provost of the University.

The Office of Research and Development is responsible for the coordination of applied research and planning activities of the University related to the social, economic, and educational development and improvement of the State and region.

The Cooperative Extension Service is responsible for programs of informal education related to youth development, agricultural production and marketing, consumer education, family-oriented projects, community improvement, resource development and conservation, public affairs, and rural and urban county extension programs through the area Appalachian centers.

University Extension offers college-credit courses, many of them taught by resident faculty members, at many places in West Virginia. The Institute for Labor Studies is designed to promote, organize, and conduct labor education activities in cooperation with union organizations.

More than 2,000 persons enroll annually in training courses offered in communities throughout the State by the Mining and Industrial Extension Service. The School of Mines also sponsors short courses in coal mining, coal preparation, mine equipment and maintenance, and gas measurement. In cooperation with the State fire marshal, it sponsors a State Fire School.

The International Programs unit is responsible for the U.S. AID cooperative programs that now exist between West Virginia University and Tanzania, Kenya, and Uganda, for international education contracts and agreements, and for administering and developing the overseas commitments of West Virginia University.

The University now has staff members in Tanzania, Kenya, and Uganda, and has undertaken the planning, construction, staffing, and development of curriculum for the new Agricultural College of Tanzania, under construction.

The Parkersburg Center is a fully integrated component of West Virginia University. It began operations in September, 1961, and offers basic University course work to qualified persons at relatively low cost. The center maintains close liaison with the Parkersburg College Fund, a non-profit corporation, which was established to coordinate voluntary financial support for the branch.

The Kanawha Valley Graduate Center of West Virginia University at Institute opened in 1958. It includes programs leading to the master of science degree in chemistry, chemical engineering, mechanical engineering, and business administration. For further information call, or write, or visit the office, Room 111, Library Building, (Ground Floor) West Virginia State College, Institute, West Virginia. Address mail to the Kanawha Valley Graduate Center, Box 308, Institute, West Virginia. Telephone 768-8815.

Organization

ACCREDITATION

West Virginia University is a member of the North Central Association of Colleges and Secondary Schools. All of the University's educational programs are fully accredited by the North Central Association and by the appropriate accreditation agencies of the professional schools.

ENROLLMENT

The University's total enrollment in the first semester of the academic year 1965-66 was approximately 12,000. Of this number, 2,779 were enrolled in graduate or post-baccalaureate professional programs, 418 students were attending the two-year Parkersburg Center of the University, and 73 were enrolled at the University's Kanawha Valley Graduate Center.

INSTRUCTIONAL SCHEDULE

The University year is divided into two semesters of approximately seventeen weeks each and a summer session of nine weeks. The University Calendar is on the inside front cover of this catalog.

GOVERNMENT AND ORGANIZATION OF THE UNIVERSITY

The Board of Governors is vested by law with authority for the control and management of the educational, administrative, financial, and business affairs of the University, whose chief executive officer is the president of the University. The board is bipartisan and consists of nine members appointed by the governor of the State with staggered terms of nine years. At least one member is appointed from each Congressional District, and at least four members must be graduates of West Virginia University. Members are eligible for reappointment.

The board also has responsibility for Potomac State College, a two-year institution at Keyser. Other public institutions of higher education in West Virginia are governed by the State Board of Education.

The President is the chief executive of the University. In this capacity, he is, *inter alia,* the principal academic officer and head of the faculties of the University,

a role which his position as presiding officer of the University Senate symbolizes. The chief officers of administration, responsible and reporting directly to the President are: the Provost, the President's deputy for academic affairs who is presently also the Dean of the Graduate School, the Vice-President—Medical Center, the Vice-President—Appalachian Center, the Vice-President—Administration and Finance, and the Director of Student Educational Services.

The Faculty Assembly is composed of all full-time faculty members of the University plus the President, the Provost, other chief administrative officers, and such professional administrative personnel who have been approved for membership by the Senate Committee on Membership and Constituencies. The Faculty Assembly has two regularly scheduled meetings per year, once in October and once in April. During at least one of these meetings the President shall present a "State of the University" report emphasizing special problems confronting the university and progress or problems in the areas of the instructional program, research activities and public service. Free discussion and debate of these issues are encouraged at Faculty Assembly meetings.

The principal functions of the Faculty Assembly are to review actions taken by the University Senate as provided for in the Faculty Constitution, to deliberate and express opinions on questions relating to policies and the administration of the University, and to elect Senators to represent constituency groups of the faculty.

The University Senate is the representative group of the faculty members which exercises the legislative power of the faculty subject to the limitations of the Faculty Constitution. Because the faculty numbers approximately eight hundred full-time members, a representative Senate elected by professors of the various academic units permits a more orderly and thorough discussion of academic proposals. The Senate meets once each month during the regular academic year.

The Senate has authority to recommend general policies to the President and the Board of Governors in several areas of University concern. Among these are the addition and deletion of all programs and courses, the academic calendar and the schedule of classes, matters affecting student life such as standards of conduct, discipline, health living conditions, etc., and the organizational structure of the University with reference to academic matters.

SUMMER SESSION

The Summer Session is nine weeks in length. It opens in June and closes in August.

Requirements for admission and character of the work offered are the same for the Summer Session as for the regular academic year.

University High School is in session for secondary-school student teaching, practice supervision, and observation. The University Laboratory Elementary School is in session during the first six weeks for elementary school observation and practice supervision.

Credit may be obtained towards the Bachelor's, Master's, and toward the Doctorate. Offerings are varied from summer to summer so that students may complete work for the Master's Degree by attending summer sessions only.

For complete information and description of courses, see the *Summer Session Bulletin*.

EVENING EDUCATION

The University offers a program of evening classes for the benefit of those who wish to continue their education beyond the high-school level and who are unable to attend the usual day classes.

All courses are taught by resident faculty members and carry full college residence credit. Many of these courses may be counted toward advanced degrees.

ARBORETUM

The West Virginia University Arboretum was established August 4, 1948, on a 100-acre tract of open field, wooded hillside, and low, moist bottomland situated between the Monongahela Boulevard and the Monongahela River. An elevation drop

of approximately two hundred feet, from the Arboretum entrance on the boulevard to the river, presents a variety of natural habitats in which several hundred species of native West Virginia trees, shrubs, and herbaceous plants may be seen.

Designed primarily as an outdoor biology laboratory for educational purposes, the Arboretum also is important for its aesthetic value to the general public. It offers a place for research and study and a place for rest and relaxation. Approximately three and one-half miles of nature trails lead through the area and are so arranged that the visitor may take from a short half-hour stroll to as much as a four-hour hike without retracing his steps.

The West Virginia Pavilion from the 1964-65 New York World's Fair will be re-erected near the Arboretum to serve as a Museum of Natural Resources.

BOOK STORES

The University operates on each campus a complete book and stationery store where students may purchase books, supplies, and professional equipment needed in connection with their class work.

The Downtown Campus store is located in the Book Store Building until completion of the new Mountainlair, at which time the store will be moved into its quarters in the new Mountainlair. The Medical Center Branch Book Store is in the Basic Sciences Building, ground floor. The Evansdale Campus store is in the Engineering Sciences Building, ground floor. The store at the Parkersburg Center is located adjacent to the classroom building, in the same building as the gymnasium.

The stores have available for sale general books in all categories as well as textbooks, a paperback book department, and a rare and out-of-print book department. Each store offers general and professional school, office, and laboratory supplies, a photographic and optics department, a department of museum reproductions, West Virginia University imprinted gift items, and a sporting goods and University imprinted wearing apparel shop.

COMPUTER CENTER

Although the University has had computer facilities since 1960, the Computer Center was organized as a separate office in 1963. The primary objective of the Center is to serve the University's computer needs in research, instruction, and administration.

The Computer Center provides a wide range of services to faculty members and organized research bureaus. The exact nature of the services provided will vary with each project, but the range includes general consultation, consultation on programming and systems problems, consultation on statistical aspects of research work, direct programming services, library program services, test scoring, machine operation, card punching, verifying, and other supporting services.

The two computers, the IBM 1401 and 1040, are available for administrative services, research, and instruction.

DEVELOPMENT OFFICE

The development program of West Virginia University coordinates much of the complexity of financing and improving educational activities, and is centered in the Development Office, jointly maintained by the University and by the West Virginia University Foundation, Inc.

Through this office, all voluntary support of the University is channeled, including support from alumni and friends on an annual basis; from industries and businesses, both within and outside West Virginia; from individuals, through major gifts and bequests; from charitable foundations; and from various governmental agencies, other than annual legislative allocations.

The program's primary aim is to blend into one strong supporting unit all the various "publics" of the University, including the institution's alumni, friends, faculty, governing body, students and parents, various state interest groups, industrial and corporate groups with a stake in the University's future, and all philanthropic and governmental sources of educational aid.

INTERCOLLEGIATE ATHLETICS

The basic objectives of Intercollegiate Athletics at West Virginia University are:

1. To provide an opportunity for students highly skilled in athletic sports to develop their ability as a preparation for coaching positions, as teachers of physical education, and for their own physical, social, and emotional improvement.

2. To develop an understanding and an appreciation of the place which intercollegiate sports occupies in American culture and to develop sound educational attitudes toward sports.

3. To educate the student body in the appreciation of sports and the best way to enjoy them from the point of view of good sportsmanship.

4. To serve as a focal point for the morale, spirit, and loyalty of the students by providing a common meeting ground and enthusiasm.

5. To provide a wholesome program of sports in which students, alumni, and friends of the University may share, to the end that the loyalty of these groups to the University and its work may be constantly renewed, strengthened, and united.

Additional objectives of the Intercollegiate Athletics program are:

1. To set desirable examples of good physical skill, team play, sportsmanship, health habits, and other characteristics that go with skilled sports, both individual and team.

2. To provide a living laboratory of democracy in action, where all players are treated without favor or prejudice, to learn to respect the rights of others, obey the rules, and judge others for what they can do.

3. To broaden the social experience of players and spectators through travel, visiting other schools, and making the acquaintance of other young people of similar age.

Activities of the Department of Intercollegiate Athletics are administered, under the President of the University, by the Director of Intercollegiate Athletics, and by the Athletic Council. The council is composed of seven members: four faculty, two alumni, and one student. The Dean of the School of Physical Education serves as a member, and the Director of Athletics is the executive officer.

Instruction and training are given each year in seasonal sports such as football, cross-country, basketball, wrestling, baseball, swimming, gymnastics, track, tennis, rifle, golf, and soccer. Matters concerning athletic eligibility regulations are decided by the Athletic Council. Scholastic eligibility regulations are established by the faculty of the University.

The rules and policies of the Southern Conference govern participation in intercollegiate athletics. In addition, sophomores must have a 1.6 grade-point average, juniors a 1.7 average, and seniors a 1.9 average.

INTRAMURAL PROGRAM

A broad intramural sports program for men and women is provided by the School of Physical Education. All students are encouraged to participate in organized sports and wholesome recreation. Competition is promoted between student groups and individuals. Such natural groupings as classes, fraternities, sororities, dormitories, and other nonfraternity units form the basis for activity in competitive sports.

The following activities are conducted for men: soccer, badminton, cross-country, tennis, volleyball, handball, basketball, swimming, relays, golf, bowling, archery, basketball free throwing, softball, horseshoes, outdoor track, mountainclimb, and rifle. Other activities may be organized when there is sufficient interest on the part of students and when facilities permit. Leagues are organized to accommodate fraternities, residence halls, and nonfraternity groups.

The following activities are conducted for women: volleyball, badminton, swimming, basketball, bowling, softball, table tennis, shuffleboard, archery, and tennis. Interclass tournaments for physical education majors are held in the following activities: volleyball, badminton, basketball, swimming, tennis, and softball. As the demand for more activities develops and when facilities become available, the program will be broadened.

THE UNIVERSITY LIBRARY SYSTEM

The West Virginia University libraries contain approximately 700,000 volumes, 34,000 maps, 8,500 reels of microfilm, and over 50,000 technical reports. About 30,000 volumes are added each year and 5,000 periodical titles are currently received. The bulk of this material is in the central Library on the Downtown Campus.

The central Library has developed strength in several fields. The collections in botany, chemistry, engineering, sociology, the Southern Appalachians, and West Virginia history are especially strong. Facilities for research in West Virginia and regional history are centered in the West Virginia Collection. In addition to an extensive collection of books, periodicals and maps, the collection contains over three million manuscripts. These, together with court records from many countries, are invaluable sources for the study of all aspects of West Virginia history.

The Rare Book Room contains an unusually fine collection of first and limited editions, including the four Shakespeare folios, and the first editions of many of the works of Dickens, Scott, and Clemens.

The Audio-Visual Department has some 1,800 educational films and 600 filmstrips, as well as 3,000 recordings.

During regular sessions, except on holidays and vacations, the Library is open from 7:55 A.M. to 11:00 P.M., Monday through Thursday; Friday, from 7:55 A.M. to 10:00 P.M.; from 7:55 A.M. to 5:00 P.M., Saturdays; and from 2:00 P.M. to 10:00 P.M., Sundays. During the Summer Session the weekday hours are from 7:55 A.M. to 9:00 P.M.; and only the Reserve Collection is available on Sundays, from 2:00 P.M. to 5:00 P.M. During periods when the University is not in session, the hours are from 9:00 A.M. to 5:00 P.M., Monday through Friday; 9:00 A.M. to noon Saturdays; closed all day Sundays and holidays (New Year's Day, Memorial Day, July 4, Thanksgiving Day, and Christmas Day). Changes in scheduled hours are posted in advance.

The Agriculture-Engineering Library, located on the second floor of the Engineering Sciences Building on the Evansdale Campus, consists of approximately 40,000 volumes, for which a public card catalog is maintained. In addition, cards for titles in the library are filed in the central Library catalog and are marked "Ag-Eng." Titles in the Agriculture-Engineering Library may be obtained either at that library or by applying at the central Library circulation desk.

The Chemistry Library, consisting chiefly of bound periodicals in the field of chemistry, is located in Room 320 of the Chemistry Building. Catalog cards for these volumes are available there as well as in the central Library catalog marked "Chem-Lib."

The 70,000 volume Law Library is located on the second floor of the Law Building. Students may use this collection by applying at that library.

The Mathematics-Physics Library, located in Rooms 305-306, Physics Building, consists of approximately 7,000 volumes. Catalog cards for titles in the Mathematics-Physics Library are filed both in that library and in the central Library catalog and are marked "Math-Phys Lib."

The Medical Center Library is located on the second floor of the Basic Sciences Building on the Medical Center Campus. It contains some 71,000 volumes with a complete public catalog. Author cards for titles in the Medical Center Library appear in the central Library catalog. Titles in the Medical Center Library may be obtained by applying at the circulation desk of the central Library.

OFFICE OF PERSONNEL

The Office of Personnel, located at 116 Willey Street, was created to provide a variety of personnel services designed to support the teaching, research, administrative, and service objectives of the University.

The programs include applicant recruitment, testing, and employment of full-time and part-time non-academic employees, personnel policy administration, wage and salary administration, employee training, and special benefit services.

The Medical Center Branch Office is located in the University Hospital for the convenience of staff and employees.

The employment office of the central personnel office and the Medical Center branch office are both concerned with University-wide employment opportunities existing on all campuses. Therefore, one application submitted at either convenient

office is all that is necessary to be considered for any opportunity existing on any campus of the University.

Student Employment

Students seeking full-time or part-time employment on or off the campus may receive service and assistance from the Office of Personnel. All employment opportunities are posted each week on the bulletin boards located in the personnel offices. Any student interested in a position which has been listed should go to either personnel office during the regular hours (8:15 A.M.-5:00 P.M.) and apply for the position. Qualified students will be given a referral introduction to the prospective employers.

SPEECH AND HEARING CENTER

The Speech and Hearing Center, 284 Prospect Street, functioning as one of the service and training facilities of the Division of Clinical Studies, offers services to University students and residents of the surrounding area in the evaluation and management of speech and hearing disorders.

Speech problems such as stuttering, voice defects, articulatory errors, foreign dialect, and others are examined and therapy is provided if required. Nonmedical tests of hearing and aural rehabilitation services are also available at this clinic.

Appointments for consultations should be requested by telephone or letter. Nominal fees are charged for services rendered.

UNIVERSITY BROADCASTING

A variety of academic and administrative units and many students of the University actively participate in and use radio and television.

The Office of Radio, Television, and Motion Pictures plans and produces programming for all areas of the University. The Cooperative Extension Service of the Appalachian Center, the School of Journalism, the Department of Speech, and the Department of Intercollegiate Athletics are particularly active in broadcasting activities.

The University's noncommercial educational television channel, WWVU-TV, Channel 24, Morgantown, is owned and operated by the Board of Governors. Its day-to-day operation, including programming and technical, is part of the responsibilities of the Office of Radio, Television, and Motion Pictures. Station WWVU-TV, the State's first educational television station, serves 15 counties in north-central West Virginia. The transmitter is located at Chestnut Ridge, in Preston County; offices and studios are on the Evansdale Campus.

The University, particularly through its television channel activities, is a member of the Eastern Educational Network, Educational Television Stations of National Association of Educational Broadcasters, National Educational Television Network, West Virginia Broadcasters Association, West Virginia Educational Broadcasting Authority, and the West Virginia Educational Television Council.

Regular radio programs are offered to West Virginia commercial radio stations, particularly by the Appalachian Center. Sports broadcasts are an activity of the Department of Intercollegiate Athletics.

Students interested in broadcasting have excellent opportunities to participate in actual preparation and production of University television and radio programs. Participation in these programs is usually through the Department of Speech and the School of Journalism, each of which offers courses in broadcasting. Professional staff from the Office of Radio, Television, and Motion Pictures teach certain classes in the two academic areas.

UNIVERSITY HONORS PROGRAM

Because students develop in their own rates of learning and their attitudes towards academic endeavors, the University has provided special opportunities for those who learn somewhat faster than most and are more theoretically inclined. Carefully selected students are invited to participate in the University Honors Program. This program is concentrated in the general education area (Core Curriculum) of

the freshman and sophomore years. (Students in their junior and senior years will be concentrating more in the professional areas, so the honors work in these years will be up to the various departments and colleges. Many of them are now developing or have already developed programs of special opportunities for these years.)

Honors students may elect at least one of several honors classes offered each semester. These classes are small (10 to 15 students in each), and each student is expected to write a good deal and participate in class discussion. In addition, students are encouraged to take courses by examination and enter immediately into somewhat more advanced courses.

Honors students are invited to special lectures and seminars offered by various departments on campus. They enjoy special library privileges since they will be expected to do kinds of study requiring library facilities.

UNIVERSITY PUBLICATIONS

The following publications are issued regularly at the University:

1. The *West Virginia University Bulletin* is issued Monday, Wednesday, and Friday. The series includes this *Undergraduate Catalog, Announcements* of the College of Law, the Medical Center, the Graduate School, and the Summer Session, and other occasional University publications.

2. The bulletins, circulars, and current reports of the Agricultural Experiment Station.

3. The circulars of the Cooperative Extension Service, including *Farm Women's Club* leaflets, *4-H Suggestions, Treasures of the Trail,* and special pamphlets.

4. Cooperative Extension Service news information sheets, published weekly.

5. The bulletins of the Engineering Experiment Station and of the School of Mines.

6. The *West Virginia Law Review,* official publication of the West Virginia Bar Association, edited by the faculty of the College of Law.

7. Miscellaneous publications under the title of *Philological Papers* or *Biological Studies.*

8. *Appalachian Review,* published quarterly.

9. The annual *Proceedings* of the West Virginia Academy of Science.

10. The *West Virginia Fourth Estatesman,* a quarterly publication, edited by the faculty of the School of Journalism.

11. *The W.V.U. Directory* is issued in the fall by the Office of Publications.

12. Miscellaneous publications of the Bureau for Government Research and the Bureau of Business Research.

13. The *Daily Athenaeum,* student-edited newspaper, is published Tuesday through Friday mornings by students of the School of Journalism. Heads of the editorial and business staffs are appointed by the University Committee on Student Publications from a list of eligible candidates certified by the Dean of the School of Journalism.

14. The *Monticola,* student yearbook, is published by upperclass students. The editorial and managerial staff is appointed by the University Committee on Student Publications.

15. *Victorian Poetry,* a critical journal of Victorian literature, is edited by the Department of English and the Office of Publications.

16. *The WVU Woman,* a handbook for and about the women students of the University, is published by Associated Women Students under the editorial supervision of the Office of Publications.

17. Annual publication of the program for the *Festival of the Fine and Lively Arts,* an event sponsored by the Creative Arts Center. The program is printed under the supervision of the Office of Publications.

18. Miscellaneous publications of the West Virginia Center for Appalachian Studies and Development, and the Office of Research and Development.

19. Miscellaneous publications of the University Library.

ASSOCIATED INSTITUTIONS

The West Virginia Academy of Science was organized in 1924 to bring about closer affiliation among scientists of the State and to encourage the pursuit of scientific work in West Virginia. It is now a body of nearly five hundred persons who are interested in the service of science in the development of the State. Members are widely distributed throughout the State and adjoining states and are representative of colleges, high schools, and industries. A Collegiate Academy and a Junior Academy are sponsored by the Senior Academy. Annual meetings, held at various institutions of higher learning, are divided into sections on biology, chemistry, geology and mining, mathematics and physics, psychology and education, history of science, and social sciences. The *Proceedings* of the annual meeting are published under the auspices of the University.

The West Virginia Geological and Economic Survey, located in the Mineral Industries Building, is governed by its own Commission and receives separate appropriations. The Survey, founded by an Act of the Legislature in 1897, is recognized as one of the leading State Surveys. A section of Archeology is also included.

One of its major purposes is to investigate all natural resources of the State, especially mineral resources, and make the results of investigations available to the public in the form of written reports and maps.

Accomplishments of the Survey include complete geologic, soils, and topographic (inch-to-the-mile) map coverage of the State with written reports, as well as preparation of numerous special reports on mineral and other natural resources. A new topographic mapping program (inch-to-2,000-feet), using aerial photographs, is more than 50 per cent complete.

Core drill examinations of river terrace deposits, archeological sites, and other subsurface investigations are routinely carried out with Survey owned and operated equipment.

The professional staff is composed of nine geologists, a spectroscopist, a cartographer-engineer, a librarian, and two archeologists. The State Geologist is a member of the University faculty and there is a close cooperation between the Survey and the Department of Geology. Geology faculty members and graduate and undergraduate student majors are employed part-time. Three geologists from the U.S. Geological Survey are assigned here for cooperative studies on ground water.

The large collection of well cuttings and cores (representing 4.5 million feet) and well logs (more than 50,000) on file bring geologists from major petroleum companies throughout the United States here to study them.

The Materials Laboratory of the State Road Commission is housed in the Engineering Sciences Building. Its work includes testing of all materials used by the Commission and research problems of road construction and maintenance in West Virginia. The State Road Commission and the College of Engineering cooperate on research and development programs.

OFFICE OF STUDENT EDUCATIONAL SERVICES

The Office of Student Educational Services coordinates those non-classroom student services that supplement the classroom learning. The aim of this office is to respond to the need of the University as a whole to recognize itself as an instrument of education and to recognize that effective classroom learning cannot be divorced from the total University environment. Included within the Office are the units listed below.

Office of Associate Director

Cultural Activities

The Associate Director of Student Educational Services is responsible for a program of public lectures, drama, and music of both popular and classical nature. In addition, the various divisions of the University and the community supplement the University-wide program.

During the year students can attend their own legitimate theatre in which plays are presented by the Division of Drama. The University Radio Theatre also is an activity of this Division.

The University Symphony Orchestra concerts, individual recitals, operas, and chamber music programs are sponsored by the Division of Music.

Each year the annual Festival of the Fine and Lively Arts, sponsored by the Creative Arts Center, attracts much attention. Features of the Festival have included concerts by off-campus musical organizations; art exhibits; works of the theatre; films; dance presentations; chamber music offerings; recitals by faculty and invited artists; concerts by the University Choir, the University-Community Symphony Orchestra, the University Symphonic Band, and off-campus musical organizations. Other Festival attractions include jewelry exhibits, photography showings, swimming pageants, water color exhibits, and other cultural activities.

Discipline

All matters of discipline are under the jurisdiction of the Associate Director and the Committee on Discipline. (No student may be expelled without approval of the President of the University.)

A student is expected to show both within and without the University unfailing respect for order, morality, personal honor, and the rights of others. This rule is applicable at all times in all places, to all students of the University. A student may at any time be removed from the University if his presence is not conducive to the best interests of the University.

Marriage of Students

Students under the age of twenty-one years are required to report their intention to be married, one week in advance of the event, to the Office of Student Educational Services, 109 Martin Hall. The student will furnish written evidence of the consent of the parents for the marriage. Failure to make this report may be cause for disciplinary action.

Student Counseling Service

The University provides diagnostic testing and counseling for students with educational, vocational, and personal adjustment problems. These services are provided by professionally qualified psychologists and counselors.

The Student Counseling Service is a voluntary, confidential resource for students and is located on the third floor of the Student Health Service. The service is available from 9:00 A.M. to 5:00 P.M., daily.

Health Service

The University Health Service provides medical care to students of the University and supervises health conditions on the campus. The staff includes five full-time and three part-time physicians, three nurses, two laboratory technicians, and clerical personnel. The University Pharmacy, housed in the Health Center, is managed by the School of Pharmacy.

The Health Service occupies the University Health Center, located on College Avenue at Maiden Lane. This fireproof three-story building houses on the first floor the treatment room, reception room, pharmacy, and physicians' and business offices. On the second floor are physicians' offices, clinical laboratory, and X-ray. Most of the third floor is occupied by the Student Counseling Service, with one room being used by the Health Service for temporary observation of patients and for electrocardiography.

The Health Service is open from 8:00 A.M. to 5:00 P.M., daily, except Saturday and Sunday. Saturday hours are 8:00 A.M. to noon. Physicians are in attendance from 9:00 A.M. to noon, and from 2:00 P.M. to 5:00 P.M. A physician is on duty at the Health Center from 8:00 to 10:00 P.M. Monday to Friday, from 7:00 to 9:00 P.M. on Saturday, and from 3:00 to 5:00 P.M. on Sunday. A University physician can always be reached by calling the University telephone operator, 293-0111, who will give the number of the physician who is on call.

Officially enrolled full-time University students pay a fee which provides for medical examination and treatment by University physicians. Moderate additional charges are made for minor operations, treatment of fractures, and drugs furnished by the Health Service or Pharmacy. Part-time students may obtain these services by paying the fee at the time they use the Health Service.

The Health Service gives special physical examinations to students in competitive athletics, to University food handlers, and to other groups as the occasion may arise.

Students who need bed care for illness are cared for in the student space in the University Hospital (Station 82). This space is available to full-time students only. It is the policy of the Health Service to have all students requiring bed care hospitalized here. Such students remain under the care of the University Health Service physicians, with other qualified physicians being seen in consultation when necessary. Patients are admitted and discharged on the orders of Health Service physicians.

A student may not receive more than thirty days of hospitalization for any one illness, and are required to leave when discharged by the University physician. When it becomes evident that a student's illness will be so prolonged as to prevent his completing work of the current semester, he may be discharged from the Infirmary when the attending physician or the Director of the Health Service considers that he may be moved without danger to his health.

Student Insurance

A voluntary insurance plan is available to students to supplement the medical care offered by the Health Service. This plan provides for payment for hospitalization, surgical and medical fees, and other medical costs, throughout the year in Morgantown and elsewhere. For cost of this insurance and details concerning coverage see the brochure available at the Health Service. The University considers this insurance a very desirable supplement, and recommends that all who do not have other adequate medical, surgical, and hospital coverage should obtain the insurance.

Placement Service

The University Placement Service provides assistance in vocational and job selection. This service does not end with placement of the student on his first job, but may be referred to at any time in the future.

The Placement Office is on the second floor of the Book Store wing of Mountainlair, with entry off College Avenue. In addition to registration procedures, which include counseling in the techniques of job application, this service analyzes the changing market for graduates, assists alumni seeking promotion or change of position, cooperates with all individuals and agencies interested in placement, provides credentials for registered students to potential employers, and is engaged in continuous research in the interest of improving these services. A meeting place is provided for students seeking jobs, visiting company, government, and educational representatives, and faculty members whose comments are sought by employers.

A vocational library is maintained to assist any student having difficulty in deciding upon a career as well as to enable those graduating to review the kinds of opportunities available in their fields.

The Placement Service cannot furnish credentials to commercial agencies.

Student Financial Aids

The Office of Student Financial Aids, located in Room 105, Martin Hall, coordinates the scholarship, loan, and work-study programs of the University. On-campus employment opportunities can be investigated at both the Office of Student Financial Aids and the Office of Personnel of the University.

Religious Foundations and Associations

Various state and national church boards have established foundations at the University for the religious education and nurture of students. The churches of Morgantown extend a warm welcome to students of all faiths. The physical plant and equipment of each church is available for social, educational, and recreational activities of students.

Coordinator of Campus Ministry Association—The professional student religious counselors of the various churches form the Campus Ministry Association. Annually this Association elects a Coordinator who serves as official liaison with the University on all matters of campus religious life.

Baptist

The Baptist Student Movement is in the Student Center of the First Baptist Church, 432 High Street. It is sponsored by the American Baptist Convention and the local church. The B.S.M. includes the Baptist Student Fellowship and the Married Student Fellowship. Their programs encompass church school classes, worship services, evening fellowships, and many other activities. The responsibility for these programs lie with the students and the pastor to students.

Catholic

Newman Hall, 1481 University Avenue, is the social and religious center established by the West Virginia Diocese of the Roman Catholic Church for students of that and other faiths. Newman Hall is a beautiful building of English collegiate architecture immediately adjacent to the campus. It includes a chapel, dining rooms, lounge, game room, and library. The Paulist fathers are the resident chaplains.

Christian

The *Disciple Student Foundation* provides a program for Christian Church students. The Foundation is sponsored by the Department of Religious Education of the United Christian Missionary Society, Indianapolis, Ind., the Christian Churches of West Virginia, and the First Christian Church of Morgantown. These three agencies function through a Student Work Advisory Committee. The First Christian Church is the center for Foundation activities and is located at Grand Street and Cobun Avenue.

Christian Science

The *Christian Science Organization* holds weekly meetings on campus which are open to the university community. In addition to religious services, meetings include discussion of topics relevant to college life and student interests. Lectures by outstanding off-campus speakers are regularly sponsored by the organization.

Episcopal

Trinity Church, Spruce and Willey streets, is the center for student work sponsored by the Diocese of West Virginia of the Protestant Episcopal Church. This work is under the direction of the rector and the assistant rector. The program includes student worship services and meetings of the Canterbury Club, a chapter of the National Association of Canterbury Clubs, for discussion and fellowship. Canterbury Club meets in Strider Hall, located on the ground floor of Trinity Church.

Greek Orthodox

The *Greek Orthodox Youth of America* conducts student activities at 447 Spruce Street.

Jewish

The Hillel Foundation, 1420 University Avenue, represents the combined efforts of the West Virginia B'nai B'rith Lodges and of the National B'nai B'rith Hillel Foundation to bring the University's students together in religious, cultural, and social activities. Prominent lecturers and speakers are featured at regular intervals by the Foundation for the members of the group and for the general student body.

Lutheran

St. Paul Lutheran Church is the center of Lutheran student activities sponsored by the Student Service Commission of the National Lutheran Council, the Synod of West Virginia, and St. Paul Lutheran Church. The work is under the direction of the local pastor. The program includes regular services of the church and activities of the Lutheran Student Association.

Methodist

Wesley Foundation is housed in Wesley Methodist Church, 503 High Street, and provides a worship and activities center for Methodist students in the University. Facilities are provided for worship, religious education, and fellowship. The students plan and execute the program of education, worship, fellowship, community service, settlement house missions, and other activities. Kappa Phi, Methodist women's club,

and Sigma Theta Epsilon, Methodist men's fraternity, are sponsored by the Foundation.

PRESBYTERIAN

The *Westminster Foundation* represents the cooperative efforts of the Boards of Christian Education and National Missions of the Presbyterian Church, U.S.A., the Synod of West Virginia of the Presbyterian Church, U.S., and the Presbytery of Winchester, to make the Christian religion a vital factor in the experiences of students and in the relationships which these students sustain while in the University; and also through guided Christian activities in the mine-camp communities surrounding Morgantown, to train among educated men and women future Christian statesmen. The work is under the direction of the student pastor.

UNITED BRETHREN

The Student Youth Fellowship of the *Evangelical United Brethren Church* conducts student activities at the Church on Burroughs Street in The Flatts. The work is under the direction of the local pastor.

Y.W.C.A.

The *Young Women's Christian Association* is a nonsectarian fellowship of women of the University organized for the purpose of promoting and directing widely varied activities through a religious motive.

Student officers, student cabinets, boards composed of students, faculty, and townspeople, and an executive secretary direct the activities of the Y.W.C.A. The various committees, interest groups, and commissions provide not only their immediate ends, but also opportunity for fellowship and leadership training.

DEAN OF WOMEN

All interests of women students are in the hands of the Dean of Women. Her office and that of her assistant are on the main floor of Elizabeth Moore Hall.

RESIDENCE HALLS PROGRAMS

The University assumes the responsibility for supervising the seven residence halls (two for men and five for women) which it owns and two which are privately owned. For information as to accommodations and rates, address the Housing Office.

Room reservations are made for the entire academic year. Students are not released during a semester or at the end of the first semester to live elsewhere.

Each student who wants a room in one of the halls must file an application with the Housing Office. The application is sent to the student at the time he is admitted to the University. This form and an advance housing fee of $50.00 must be returned to the Office of Admissions.

No student will be permitted to live in other quarters until after the residence halls are fully occupied. All women students must live either in residence halls, sorority houses, or in houses approved by the Dean of Women.

In assignment of rooms in these buildings all freshmen shall be required to take rooms therein, no freshmen being allowed to live outside the residence halls if there is room in them. In enforcing this rule the following exceptions shall be made:

(1) When the parents or legal guardians of students reside in Morgantown or within commuting distance of the University, these rules shall not apply.

(2) When the home of the student is within such distance that it is entirely practicable for him to live in his home and reach the University by car or otherwise for all his classes, these rules shall not apply.

A student who does not claim exemption for the fall semester to live with parents or guardian cannot claim exemption for the second semester unless the parents in the meantime have moved to Morgantown.

(3) When students above the rank of freshman reside in approved sorority or fraternity houses under the supervision of the Associate Director

and the Dean of Women, these rules shall not apply. (Release from dormitory housing to live in these houses will not be granted after August 1.)

(4) When conditions of employment (such as firemen in various buildings and homes, employment on dairy and experimental farms, etc.) require residence on the premises, these rules shall not apply. Students so employed should not request reservations for residence space. All women students must receive approval of the Dean of Women before arranging to work for room and board.

When space is needed for underclass women, no senior sorority woman will be permitted to live in the halls if there is room for her in her sorority house.

More detailed information may be found in the housing contract and agreement forms for residence halls.

Off-Campus Housing

The Housing Office is located at the University Housing Center and provides information regarding private housing in Morgantown and vicinity. All graduate women students and all men students requiring living accommodations in private dormitories, residences, apartments, or houses may write or call upon the Housing Office for assistance. Private housing off-campus is available at reasonable rates within easy walking distance of the campus. Most of these facilities have been approved to meet essential safety, health, and other desirable environmental conditions of the student. A few private residences are equipped to board students.

University Apartments

The University operates several hundred furnished and unfurnished apartments for married and graduate students, faculty, and staff at reasonable rates. For information write the Housing Office.

Mountainlair

Mountainlair has come to be recognized and accepted as a synomyn for out-of-class activity, service, and education throughout the University community. The opening and dedication of the new Mountainlair in September, 1967, represents more than a decade of research and planning from which has emerged the concept, design, funding, and construction of the nation's newest and loveliest university student unions.

Designed as a building structure, an organization and a program, it serves educational, recreational, cultural, and social needs of West Virginia University. It also provides the services, amenities, and conveniences to the members of the University community—students, faculty, alumni, parents, and guests. It is in reality the "hospitality center" of the campus.

The days when the Mountainlair was merely a "place to eat" and a "place to meet" or an incidental facility for campus social events are gone. The new Mountainlair is now a community center of the first order. It is a lounge, dining room, reading room, art gallery, theatre, craft shop, music room, public relations agency, ticket bureau, conference headquarters, and Bookstore. It performs all of these functions and perhaps others—but all brought together under one roof so that physical proximity does its part in furthering a sense of community living.

The distracting influences of any decentralized University—noise, speed, complexity—suggests added need for a unifying force. Mountainlair is considered to be one such influence. Joining massive areas with intimate retreats and enjoyable recreation with serious study and further attempting to join the common interests of students in the midst of ever-increasing academic pressures, Mountainlair provides a friendly, happy atmosphere for human association, with kinship and unity of purpose the by-products.

So it is that at West Virginia University the Mountainlair may achieve its highest value as a community center, a center which serves, not just as a sheltering building structure, but as a place of learning outside the classroom, as a unifying force in the life of the University, as an active sponsor of quality in the use of leisure,

and especially as a fountainhead of self-directed activity that helps a student become ready and able to assume a responsible role in life. A full calendar of activities and events is planned, promoted, and presented by the Student Program Board in cooperation with a competent, professional staff that has been carefully selected to assure continuity and diversification in the many aspects of providing a full smorgasbord of worthwhile leisure-time activities.

Mountainlair, by its design and use, best reflects the warmth and hospitality that have become the trademark of the University and the State.

Foreign Student Coordination

Of 190 foreign students from 42 different countries on the campus in September 1966, 102 were seeking a Master's Degree or a Ph.D. and 88 were seeking an undergraduate Bachelor's Degree.

The Foreign Student Office has a staff of three and is located in the International House on the Downtown Campus. All new foreign students must contact the Foreign Student Office when they first arrive. The Coordinator of Foreign Student Programs is available for guidance and counseling for individual foreign students. The Foreign Student Relations Committee of the Student Administration works closely with the Cosmopolitan Club, the nationality organizations, and the foreign student office in an effort to bring the foreign and American students closer together. Foreign students are encouraged to join the Cosmopolitan Club, an organization of international and American students interested in international relations. International students are also encouraged to join their particular nationality organizations. The Host Family Program provides foreign students an opportunity to meet and become acquainted with American families and visit in their homes occasionally. The International Neighbors organization provides hospitality for the wives of foreign students and foreign faculty.

All inquiries and applications from foreign students must be sent to the Director of Admissions. The Test of English as a Foreign Language (TOEFL) must be taken by all foreign students before they can be admitted to West Virginia University.

Student Programs

Eligibility

To be eligible to represent the University in public appearances, a student must be enrolled in the University and must meet the eligibility requirements of the department or school in which the activity originates. The records of those students whose status is questionable should be checked at the Registrar's Office before participation is permitted. This checking should be done by the department or school in question.

To hold an elective or appointive office in a duly recognized student organization a student must be enrolled in the University for at least 12 semester hours; and if in other than his or her first semester in residence, must have maintained a minimum cumulative average of "C" as reported by the Registrar's Office, at the time of election or appointment. After completion of his or her first semester in the University no person shall be pledged to either a social fraternity or sorority unless he or she has attained a cumulative average of "C" as reported by the Registrar's Office at the time of pledging.

Academic and Service Honor Societies

Alpha Epsilon Delta (Pre-medical)
Alpha Omega Alpha (Medical)
Alpha Phi Omega (Service)
Alpha Pi Mu (Industrial Engineering)
Alpha Zeta (Agriculture)
Arnold Air Society (Air Force ROTC)
Chi Epsilon (Civil Engineering)
Chimes (Junior women)
Eta Kappa Nu (Electrical Engineering)
Helvetia (Sophomore men)
Interfraternity Council
Kappa Kappa Psi (Band honorary)
Kappa Phi (Service)
Li-Toon-Awa (Sophomore women)
Mortar Board (Highest women's honorary)
Mountain (Highest men's honorary)
Omicron Delta Epsilon (Economics)
Omicron Nu (Home Economics)
Order of the Grail (Jr. men's honorary)
Pershing Rifles (Military)
Phi Epsilon Phi (Botany)

Phi Lambda Upsilon (Chemistry)
Pi Delta Phi (French)
Pi Epsilon Tau (Petroleum Engineering)
Pi Tau Sigma (Mechanical Engineering)
Psi Chi (Psychology)
Rho Chi (Pharmaceutics)
Scabbard and Blade (Army R.O.T.C.)
Sigma Delta Pi (Spanish)
Sigma Gamma Epsilon (Earth Science)
Sigma Gamma Tau (Aeronautical Engineering)
Sigma Tau Sigma (Tutoring honorary)
Sigma Theta Tau (Nursing)
Sphinx (Senior men)
Tau Beta Pi (Engineering)
WVU 4-H Club
Xi Sigma Pi (Forestry)

Professional Honor Fraternities

Alpha Delta Sigma (Advertising)
Alpha Delta Theta (Medical Technology)
Alpha Kappa Psi (Professional business)
Alpha Tau Alpha (Agricultural Educ.)
Beta Alpha Psi (Accounting)
Delta Sigma Delta (Dentistry)
Kappa Psi (Pharmacy)
Lambda Kappa Sigma (Pharmacy women)
Phi Alpha Delta (Law)
Phi Beta Pi (Medicine)
Phi Chi (Medicine)
Phi Delta Pi (Law)
Psi Omega (Dentistry)
Theta Sigma Phi (Journalism women)
Xi Psi Phi (Dentistry)

Professional Honor Societies

Delta Sigma Rho—Tau Kappa Alpha (Forensics)
Graduate Business Association
Institute of Electrical and Electronic Engineers
Institute of Traffic Engineers
Mu Phi Epsilon (Music women)
Music Educator's National Conference
Omega Chi Epsilon (Chemical Engineering)
Phi Alpha Theta (History)
Phi Mu Alpha (Music men)
Phi Upsilon Omicron (Home Economics)
Pi Sigma Alpha (Political Science)
Sigma Alpha Eta (Speech and Hearing)
Sigma Delta Chi (Journalism men)
Student Education Society
WVU Forestry Club
WVU Industrial Arts Club

National and Local Student Groups

African Student Association
Agriclub
All Campus Party
American Association of University Veterans
American Chemical Society
American Institute of Aeronautics & Astronautics
American Institute of Chemical Engrs.
American Institute of Industrial Engineers
American Institute of Mining, Metallurgical and Petroleum Engineers
American Pharmaceutical Association
American Society of Agricultural Engineers
American Society of Civil Engineers
American Society of Mechanical Engineers
The Art Society
Associated Women Students
Association for Childhood Education International
Baptist Student Fellowship
Blade & Spade Club
Block and Bridle Club
Campus Ecumenical Council
Computer Science Club
Cosmopolitan Club
Dairy Science Club
Dolphin
Fi Batar Cappar
Future Farmers of America
Guild Student Group of American Guild Organists
Hillel Foundation (Jewish youth)
Home Economics Club
Inter-Varsity Christian Fellowship
Mathematics Club
Men's Physical Education Majors
Mountaineer Rifle Club
Newman Student Movement
Orchesis
Panhellenic Council
Physical Education Majors' Club (women)
Russian Circle Club
Sigma Theta Epsilon (Religious)
Student Party
Town Women and Commuters (TAC)
Varsity Club
WVU Amateur Radio Club
WVU Professional Recreation Society
WVU Society of Mining Engineers
WVU Student Chapter of Soil Conservation of America

W. Va. Chapter of the Organization of Arab students
Young Democrats
Young Republicans
Y.W.C.A.

Associated Women Students

All women students are members of Associated Women Students. The purposes of this association are: (1) to regulate all matters pertaining to the student life of its members; (2) to further in every way a spirit of friendliness and unity among the women of the University; (3) to increase their sense of responsibility; and (4) to be a medium for maintaining high scholastic and social standards.

Responsibility for directing the work of the Association rests with the Executive Council, composed of the following members: a president, two vice-presidents, a secretary, a treasurer, and a representative from each class. The officers are elected annually. To be eligible for membership on the Executive Council, a woman must have no less than a "C" average in all her class work.

The Association was admitted to active membership in the Intercollegiate Association of Women Students in 1921.

Social Organizations

FRATERNITIES

Alpha Gamma Rho, Alpha Phi Delta, Beta Theta Pi, Delta Tau Delta, Kappa Alpha, Kappa Sigma, Lambda Chi Alpha, Phi Delta Theta, Phi Kappa Psi, Phi Kappa Sigma, Phi Sigma Delta, Phi Sigma Kappa, Pi Kappa Alpha, Sigma Chi, Sigma Nu, Sigma Phi Epsilon, Tau Kappa Epsilon, Theta Chi.

FRATERNITY ADVISERS

Alpha Gamma Rho, A. L. Barr; Alpha Phi Delta, Michael Caruso; Beta Theta Pi, Paul L. Selby; Delta Tau Delta, Joe Rainey; Kappa Alpha, Stancil Johnson; Kappa Sigma, Alan Donaldson; Lambda Chi Alpha; Phi Delta Theta, John B. Harley; Phi Kappa Psi, Nathan H. Thomas; Phi Kappa Sigma, Charles Lazzell; Phi Sigma Delta, Victor Lemke; Phi Sigma Kappa, Bernard Stenger; Pi Kappa Alpha, Jesse Clovis; Sigma Chi, William W. French; Sigma Nu, Larry Christian; Sigma Phi Epsilon, Avery Gaskins; Tau Kappa Epsilon, Walter Proznick; Theta Chi, Maynard Frasure.

SORORITIES

Alpha Delta Pi, Alpha Phi, Alpha Xi Delta, Chi Omega, Delta Delta Delta, Delta Gamma, Gamma Phi Beta, Kappa Delta, Kappa Kappa Gamma, Pi Beta Phi, Sigma Delta Tau.

CHAIRMEN OF ALUMNAE ADVISORY BOARD

Alpha Delta Pi, Miss Betty Miller; Alpha Phi, Mrs. Joseph Gluck; Alpha Xi Delta, Mrs. Robert Fleming, Jr.; Chi Omega, Mrs. Stanley Cox; Delta Delta Delta, Mrs. Clark Sleeth; Delta Gamma, Mrs. Robert Conner; Gamma Phi Beta, Miss Ann Sharpe; Kappa Delta, Mrs. Robert Yagle; Kappa Kappa Gamma, Mrs. Jay Johnson; Pi Beta Phi, Mrs. Ward Stone; and Sigma Delta Tau, Mrs. Laurence DeLynn.

SORORITY SUPERVISION

Supervision of all sororities is vested in the Dean of Women's office.

STUDENT ADMINISTRATION

University Student Administration is involved in all aspects of campus life and serves as a communication network with the faculty and administration. As a part of Student Educational Services, campus-wide activities—including special speaker series, orientations, cultural and athletic events, weekend programs, leadership training seminars, and other educational programs—are initiated. The Cabinet, the Legislature, the Judicial and the Academic Study branches comprise Student Administration.

The Cabinet serves as an arena for expression, dialogue, and debate between the student and the administration. Long-range philosophies and immediate campus problems affecting the institution's growth are highlighted within this medium of a

"participative-management" concept. It is composed of a representative from Interfraternity Council, Panhellenic, Associated Women Students, Residence Halls, Student Union, the school newspaper, religious groups, foreign students, student honoraries, and other necessary groups. The main function of the Cabinet is to provide the University President with a place to seek student opinion and permit them to have a voice in the overall development of the institution.

The Student Court is composed of seven justices; it sits in judgment and renders decisions on violations other than those of an academic nature. A joint student-faculty committee is intensively studying the role of this body as it relates to the general student welfare. This study will culminate in a code of conduct.

The Legislature is the policy-making branch of Student Administration. The Legislature ratifies or rejects all appointments proposed by the Executive Council, determines the Statutory Code, appropriates Student Administration funds, and reviews reports of the student committees and organizations under its jurisdiction. The membership of Legislature is composed of representatives from the existing colleges and schools of the University, each school having delegated representation on the basis of population percentages.

The Academic Branch exists on two levels. Each undergraduate college has a student-faculty committee which meets with the dean of that college. Problems relevant to the college are discussed. The student chairman from each college forms the academic study forum which meets with the University Provost to discuss common or campus-wide academic problems.

The Executive Council, an administrative unit working directly with the cabinet, is composed of ten members—the Student Body President and Vice-President, and the Presidents and Vice-Presidents of the Senior, Junior, Sophomore, and Freshman classes. It makes sure the day-to-day work of government is carried on. It also plays an important role in initiating policy and new programs. In addition, the Executive Council supervises the committee system, which includes appointments, recommendations, reports, and evaluations.

All Student Administrative Branches, the Student Organization Area, and the Training-Finance-Education Area comprise the Student Programs Division of Student Educational Services which is dedicated to "out of classroom" learning experiences.

Admission, Fees, Registration, And Regulations

Part II

Admissions

ADMISSION FROM SECONDARY SCHOOLS

Students may be admitted to the University on the basis of examination or transcripts from accredited high schools. High school graduates are required to present credit for 4 units of English and 1 unit of algebra. In addition, agriculture, chemistry, forestry, geology, mathematics, physics, and the health sciences require 1 unit of geometry. Engineering and mining majors are required to present 2 units of algebra, 1 unit of geometry and ½ unit of trigonometry, or its equivalent. Students who do not meet these requirements in mathematics may apply for admission to the pre-engineering curriculum.

All students entering as first-term freshmen are required to take the American College Testing Program tests (ACT) and have the report of scores sent to the University. No other test can be substituted for this test.

Students from West Virginia high schools should obtain applications for admission from their high schools. Out-of-state students may write the Office of Admissions and request an application form. Applicants should prepare their part of the application and then return it to the secondary school. The schools will then send the completed application and a transcript of high school grades directly to the Office of Admissions. Applications and transcripts must be received by the University at least three weeks in advance of registration.

Students should not apply for admission until they have met the requirements as outlined in the application form.

West Virginia University encourages students to work to their capacity and to advance as rapidly as appropriate in their academic work. Therefore, qualified juniors and seniors who take college level subjects offered in their schools in cooperation with the CEEB Advanced Placement Program should take the appropriate three-hour examinations administered by the Advanced Placement Service and have the scores and tests sent to West Virginia University. Credit for corresponding West Virginia University courses is automatically given for high achievement in these tests.

Students may also petition departments to take placement examinations covering courses offered at West Virginia University. Credit or advanced placement is given for satisfactory completion of these tests.

ADMISSION OF TRANSFER STUDENTS

Applicants for transfer from another college or university should submit the following to the Office of Admissions:

(1). A complete application for undergraduate admission.

(2). A certified transcript of all college work taken to date, including a statement of good standing. A certified statement covering subjects subsequently taken should be sent as soon as it is available.

(3). Catalog pages describing all subjects which have or will have been completed; the applicant's name should be written on each page and each subject indicated by a check mark in the margin. Complete catalogs should not be sent. (Not necessary from West Virginia colleges.)

Students who have completed seven hours or more at another institution will apply as transfer students.

The cumulative average of all work attempted must be at least "C". Credit is transferable in single courses carrying a grade of "C" or higher. A grade of "D" on the first of sequence courses may be transferred if the second course grade is "C" or higher.

An average of 2.0 on all mathematics courses completed is required for transfer into the College of Engineering or School of Mines.

All transcripts must be in the Office of Admissions three weeks in advance of registration.

Transcript credit from junior colleges is limited to 72 semester hours of lower-division courses.

Special students are subject in all respects to the usual rules relating to registration and scholarship. Admission to any class is subject to the approval of the instructor in charge.

Evaluation of transcripts for transfer of credit is furnished only after receipt of complete official transcripts and application for admission.

Transfer students generally are admitted only after they complete one full year at another institution. Applicants who have less than one full year of college work elsewhere must submit both their college and high school records.

ADMISSION OF SPECIAL STUDENTS

Persons not desiring to become candidates for a degree may, by special permission, be admitted as special students. Such students are subject in all respects to the usual rules relating to registration and scholarship. Admission to any class is subject to the approval of the instructor in charge.

Students who do not plan to follow a degree program at West Virginia University should submit only a statement of good standing from the last college attended.

ADMISSION OF FOREIGN STUDENTS

Foreign citizens applying for undergraduate entrance must have their completed application available for review at least four months prior to the date of enrollment. Decisions about admission cannot be made until complete records have been received. Inquiries and applications should be addressed to the Office of Admissions.

Students applying as undergraduates should have completed the equivalent of a secondary education and ranked higher than average in their class.

Preliminary applications, prepared by the Institute of International Education, are available at United States Consulates and United States Information Agency offices. Students with a native language other than English are required to take the "Test of English as a Foreign Language." Applications for the test should be addressed to: TOEFL, Educational Testing Service, Princeton, New Jersey.

Information is available at the above named offices.

Foreign students should make all arrangements for their financial obligations to West Virginia University and for their entire stay in the United States before leaving their countries.

READMISSION

Undergraduate students who leave the University for at least one complete semester are required to submit an application for readmission.

Students who have been suspended from the University should request an Application for Reinstatement from the dean of the school or college from which the student was suspended.

Approval in writing must be secured in advance to elect courses offered elsewhere. An overall average of "C" is required on all work completed at the University in order to obtain such approval. Credit will be accepted for transfer for courses carrying a grade of "C" or higher when the conditions indicated above have been met.

Students wishing to change their major upon readmission must have permission from their previous dean and the dean of the college to which they wish to transfer.

ADVANCED STANDING EXAMINATION

Application for advanced standing on work of college grade for which college credit cannot be established on the basis of official transcript of record should be

made to the Registrar of the University. Upon payment of the proper fee the Registrar will issue an examination permit. After examination, the department will report to the Registrar of the University courses, if any, for which the applicant is entitled to credit.

VETERANS

The University recognizes that men and women from the Armed Forces who enter college require individual and personalized guidance in order to facilitate their entrance and to aid their adjustment to University life. The Veterans Coordinator is available for consultation and help in the solution of personal problems which may arise in the transition to civilian student life.

Information regarding educational opportunities made possible at the University through provisions of the Veterans Readjustment Benefits Act of 1966—G.I. Bill (Public Law 358), the Vocational Rehabilitation Program of the Veterans Administration (Public Law 16), and the War Orphan's Educational Assistance Act of 1956 (Public Law 634) may be obtained from the Veterans Coordinator by personal conference or by mail. An amendment to Public Law 634, passed by Congress in the summer of 1964, provides benefits to many dependents of 100 per cent disabled veterans.

Students with more than four months of continuous active honorable service in one of the armed forces are exempted from taking basic military training (i.e., Military Science or Aerospace Studies 1, 2, 3, 4). Scholastic hours credit will be allowed for military training for which a student is exempted. Army, Navy, and Marine veterans should present a copy of their DD 214 (Separation papers) or discharge to the Professor of Military Science. Air Force veterans should contact the Professor of Aerospace Studies.

Veterans having at least one continuous year of military service may be exempted from the Physical Education general program. No scholastic credit is given. Present proof of military service to the Registrar.

THE COLLEGE OF COMMERCE

Applicants seeking admission to the College of Commerce for the purpose of obtaining a degree must have earned at least 58 semester hours of required and approved elective courses in the Pre-Commerce curriculum at a grade average of not less than "C." No student will be admitted who has not completed Economics 51 and 52 and Accounting 51. Freshmen and sophomores are enrolled as Pre-Commerce students in the College of Arts and Sciences where their programs of study will be directed by Pre-Commerce advisers.

THE CREATIVE ARTS CENTER (Music—Art—Drama)

Placement tests and auditions or a portfolio of the student's art work may be requested for admission to the Creative Arts Center.

Students transferring to the Creative Arts Center from other colleges and schools will be required to present a minimum grade-point average of 2.0. Exceptions may be made in the case of first-semester freshmen.

Advanced standing in the Division of Music in Applied Music and Music Theory is given only by examination.

THE SCHOOL OF DENTISTRY

Applicants for admission to the School of Dentistry should write to the Assistant Registrar, Medical Center, West Virginia University, who will furnish official blanks upon which formal application must be made.

A $10.00 application fee is required and must accompany the application.

Applicants must present evidence of having completed successfully two full academic years (60 semester or 90 quarter hours) of work in the liberal arts in an accredited college based on the completion of the prescribed four-year high school course. All science courses shall include both lecture and laboratory instruction. The

college courses shall include not less than 6 semester hours credit each in English composition and rhetoric, in biology (preferably zoology), in physics, in inorganic chemistry, and in organic chemistry.

A dental aptitude testing program is sponsored by the Council on Dental Education of the American Dental Association and approved by the American Association of Dental Schools. Applicants for admission to the School of Dentistry are required to take the aptitude tests and to submit the resulting scores. These scores will be considered as a factor in the selection of students. The tests may be taken in any one of the dental schools, or any one of the testing centers set up in colleges and universities throughout the United States. Information concerning the places, and the dates on which the tests will be given, may be obtained from the Secretary of the Council on Dental Education, Division of Educational Measurements, American Dental Association, 211 East Chicago Avenue, Chicago, Illinois 60611.

A personal interview with the Committee on Admissions is required. Interviews will be at the Medical Center, West Virginia University, and will be arranged as far as possible, to suit the convenience of the applicant.

Good physical and mental health are essential for the successful study and practice of dentistry. Good eyesight is particularly important. The applicant who is admitted to the School of Dentistry must present on or before the day of enrollment, a certificate from the examining doctor stating the condition of his eyes, and if any correctible defects in vision exist he shall present evidence that proper corrections have been made.

A deposit fee of $50.00 for residents and $100 for non-residents is required when the applicant accepts offer of admission. This amount will be applied as part-payment of the tuition fee when the applicant registers for the first semester. The deposit will be forfeited if the applicant fails to register.

Division of Dental Hygiene. The dental hygiene program is a division of the School of Dentistry. Its curriculum offers a four-year degree program for dental hygienists. Upon the fulfillment of all prescribed requirements and with the recommendation of the School of Dentistry, the candidate shall be awarded the degree, Bachelor of Science in Dental Hygiene. The general admission policies established by West Virginia University shall be met. The applicant must be a graduate of an accredited high school or preparatory school which is acceptable for college entrance. One unit in both algebra and plane geometry will be necessary for admission. The Dental Hygiene Aptitude Test will be required of every applicant.

Further details concerning requirements of the School of Dentistry may be obtained by writing to the Assistant Registrar, Medical Center, or Mrs. Patricia Jones, Director of Dental Hygiene, Medical Center.

Complete information concerning the School of Dentistry may be found in the current *Announcements* of the Medical Center.

THE COLLEGE OF ENGINEERING AND THE SCHOOL OF MINES

For admission to the College of Engineering or the School of Mines, prospective students must be qualified for admission to the University, present credit for 2 units of algebra and 1 unit of geometry (1 unit plane geometry or 1 unit integrated geometry or ½ unit plane geometry and ½ unit solid geometry) and ½ unit of trigonometry. Students who do not meet these requirements in mathematics may apply for admission to the pre-engineering or the pre-mines course in the College of Arts and Sciences.

It is highly recommended that prospective students take the American College Test (ACT) in the spring preceding their admission to the College of Engineering or School of Mines. Based upon these test results, it is further recommended that those students who require an additional background in mathematics or English attend the summer session of the University, enrolling in courses such as Math. 3 (College Algebra), Math. 4 (Plane Trigonometry), and English 0. Completion of these courses will permit the student to enter the regularly scheduled engineering program at the beginning of the fall semester.

Students desiring to transfer from another college, school or university into the College of Engineering or the School of Mines must meet the following requirements:

(A). Have a grade-point average of 2.0 or higher for all college level courses (English 0, Math. 0, 1, 2, and 7 count for entrance only).

(B). Have a grade-point average of 2.0 or higher for all mathematics courses excluding only Math. 0 and 1.

THE COLLEGE OF HUMAN RESOURCES AND EDUCATION

Requirements for admission to the undergraduate programs of the College of Human Resources and Education are listed by Divisions in subsequent pages of this bulletin. Candidates for Bachelor's Degrees in Home Economics and in Speech Pathology and Audiology may enter these programs during the freshman year.

Candidates for a Bachelor's Degree in Education shall complete 58 semester hours of approved college work, with an average of at least 2.25 grade points per credit hour on all work attempted. These candidates register for their first two years of work in the College of Arts and Sciences. Freshmen and sophomores who expect to enter the Division of Education, College of Human Resources and Education, will indicate their intention when they register. Their studies will be directed by advisers for pre-education students. Such students should so arrange their courses of study so as to satisfy requirements for junior standing and should be fulfilling requirements for the certification of teachers.

THE SCHOOL OF JOURNALISM

A candidate seeking admission to the School of Journalism for the purpose of obtaining a degree must have satisfied requirements for admission to one of the University undergraduate colleges and must have earned at least 58 semester hours of college credit. A student deficient in the physical education service program and military science will be required to take these subjects as soon as possible. During his freshman and sophomore years he should have completed satisfactorily all or most courses specified for prejournalism majors. A prejournalism student not maintaining at least a "C" average during his first two years in all college subjects must apply directly to the School of Journalism Committee on Scholarship for admission to the School.

THE SCHOOL OF MEDICINE

Applicants for admission to the School of Medicine should write to the Assistant Registrar, Medical Center, West Virginia University, who will furnish official blanks upon which formal application must be made.

A $10.00 application fee is required and must accompany the application.

The requirements outlined below may be met in either of two ways: first and preferably, by pursuing a course of study leading toward a Bachelor's Degree with major and minor fields of the applicant's own choosing; or secondly, by following a more rigidly prescribed curriculum generally offered as a "Premedical" curriculum. In either case, the applicant must have completed satisfactorily the minimum requirements listed below:

English Composition and Rhetoric	1 year
Zoology or Biology (with laboratory)	1 year
Inorganic Chemistry (with laboratory)	1 year
Organic Chemistry (with laboratory)	1 year
Physics (with laboratory)	1 year
Social Studies	1 year

A total of 90 semester hours of work, exclusive of military science or aerospace studies and physical education, is required.

The number of students the School of Medicine can accommodate is strictly limited. Applications for admissions are considered by the Committee on Admission of the School of Medicine, which selects those with the highest qualifications of scholarship and personal fitness. An important factor is the score of the applicant in the Medical College Admission Test sponsored by the Association of American Medical Colleges and given at suitable times. Students should consult premedical advisers

about this test or should write to The Psychological Corporation, 304 East 45th St., New York, New York, 10017. Applications for admission may be made as much as a year in advance of the opening date.

Each applicant is required to deposit $50.00 before his name is entered upon the official list of those accepted to the School of Medicine. If the applicant enrolls, this sum is applied to the tuition of the first semester. If the application is withdrawn after the applicant has been offered a place and has made a deposit, such deposit may be refunded at any time prior to January 15 of the year in which enrollment is anticipated.

Complete information concerning the School of Medicine may be found in the current *Announcements* of the Medical Center.

Medical Technology

(A). Admission requirements for the first year (premedical technology) are those for the College of Arts and Sciences, namely, 15 units of high school work including subjects specified in the Arts and Sciences section. One unit of algebra and one unit of plane geometry are required; chemistry and physics are very desirable.

(B). Admission to the third year (Medical Technology I) is based upon two years of college work with a total of 64 semester hours, as follows:

English. 6 hours. (Composition and rhetoric.)

Biological Science. 8 hours. (General Zoology or General Biology.)

Chemistry. 15-16 hours. (Inorganic Chemistry, 8 hours; Quantitative Analysis, 3-4 hours; Organic Chemistry, 4 hours) [Transfer students are required to have a complete course in Organic chemistry to include aliphatic and aromatic compounds.]

Physics. 8 hours.

Physical Education. 4 hours for women. 2 hours for men. (University requirements for students taking first two years in residence.)

Mathematics. 3 hours. (College Algebra).

Electives to complete the required hours and to meet Core Curriculum requirements. Courses such as bacteriology, parasitology, and anatomy should not be taken until after the completion of the sophomore year. A foreign language is recommended for students who plan to do graduate work.

THE SCHOOL OF NURSING

Initial application to the University should be submitted to the Admissions Office and should follow the same procedure as for all other University freshmen, including procedures related to housing.

Students are enrolled in the Pre-Nursing program in the College of Arts and Sciences for the freshman year. Contact with the School of Nursing is insured during this year through two required nursing courses and nurse-faculty advisers for pre-nursing students.

Application for admission to the School of Nursing should be made to the Dean of the School on or about December 1 of the college freshman year. Forms are available on request from the Office of the Dean of the School of Nursing. Personal interviews are scheduled following receipt of application.

A candidate for nursing should have good physical and mental health as well as those personal qualifications appropriate to a professional person. The School of Nursing through its Admissions Committee admits students who by reason of personal and intellectual qualities show promise of benefiting from the program and of contributing to the field of nursing. Factors influencing decision of the Admissions Committee are: academic record, motivation for academic nursing, health, personal qualities, and social adjustment. Applicants who, in the judgment of the Admissions Committee, present the highest overall qualifications are selected for admission to nursing and are required to attend the summer session immediately following the freshman year.

Nursing Transfer Students

A student enrolled in any other accredited college or university is eligible for admission with credit if she presents a grade-point average of 2.0, or better, based on all work attempted at previous institutions. Course work must be comparable to

first-year requirements in this curriculum except for courses in Orientation to Nursing. Because of the design of this curriculum, a transfer student must complete a minimum of three years and a summer session in the School of Nursing regardless of previous college credit.

Application for transfer should be initiated by December 1 in order to allow time for evaluation and processing of credentials. Graduates of Associate Degree programs in nursing are regarded as transfer students.

THE SCHOOL OF PHARMACY

The professional curriculum of the School of Pharmacy is based on two years of pre-pharmacy requirements. The pre-pharmacy requirements are as follows:

Algebra	3 hr.	Chemistry, Organic	8 hr.
Trigonometry	3 hr.	Physics	8 hr.
English Composition	6 hr.	Electives from	
Principles of Economics	6 hr.	Core Group A	12 hr.
Chemistry, General	8 hr.	Core Group B	6 hr.
Biology, General	8 hr.		
		TOTAL	68 hr.

Group A (at least two subjects): Art; music; foreign languages and literature, including Latin and Greek (above the elementary level); literature of the English language; philosophy; humanities.

Group B: Geography; history; psychology; political science; social science; sociology.

Students required to take Military Science or Air Force Aerospace Studies will be exempt from an equivalent number of hours of electives in Core Groups A and B.

A 2.00 average in all courses undertaken, except Military Science, Air Force Aerospace Studies, and Physical Education, is considered the minimum standard for admission.

For admission to the School of Pharmacy, formal application should be made to the Admissions Committee of the School as early as possible after February 1 but before June 1, preceding the fall term in which the student is seeking enrollment.

Applicants should write to the Assistant Registrar, Medical Center, West Virginia University, who will furnish official blanks upon which formal application must be made.

A $10.00 application fee is required and must accompany the application.

Each applicant is expected to deposit $50.00 before his name is entered upon the official list of those accepted to the School of Pharmacy. If the applicant enrolls, this sum is applied to the tuition of the first semester. If the applicant fails to enroll, this deposit fee is forfeited by the applicant.

Complete information may be obtained from the Dean of the School of Pharmacy or from the Office of the Assistant Registrar, Medical Center.

Further details concerning the School of Pharmacy are contained in the current *Announcements* of the Medical Center.

Fees and Expenses

All University fees are subject to change without notice.

All fees are due and payable at the Comptroller's desk in the Field House Annex (South) on the days of registration. Students must pay fees before registration is accepted and class tickets are released. Completion of arrangements for payment from University payroll checks, officially accepted scholarships, loan funds, grants or contracts shall be considered sufficient for acceptance of registration. Fees paid after regular registration must be paid at the Comptrollers office in the Administration Building. Any student failing to complete registration on regular registration days is subject to the Late Registration Fee of $10.00. Students registering pay the fees shown on page 44, plus special fees and deposits as required.

By order of the Board of Governors, no degree will be conferred upon any candidate prior to payment of all tuition, fees, and other indebtedness to any unit of the University.

Special Fees

Late-registration Fee (non-refundable)[1]	$ 10.00
Graduation Fee[2]	10.00
Professional Engineering Degree (including $10 graduation fee)	25.00
Student's Record Fee[3]	1.00
Fee for Change in Registration (after 8th day)	1.00
Fee for Examination for Entrance Credit, per unit	1.00
Fee for Examination for Advanced Standing	3.00
Fee for General Educational Development Tests (high-school level)[4]	15.00
Certificate of Advanced Study in Education	2.00
Fee for Reinstatement of Students Dropped From the Rolls	3.00
Fee for Examination of Candidates for Graduate Degree[5]	1.00
Diploma Replacement Fee	5.00
Physical Education Student Fee	5.00
Student Identification Card Replacement Fee	1.00
Correspondence Course in Guided Reading (per course)	1.00
Driver Education Laboratory Fee	10.00
Labor Education Service (for informal activities)	2.00-10.00
Social Work Field Supervisory Fee (per year)	75.00

Laboratory Fees

Consult departmental sections of this *Catalog* for information concerning non-refundable laboratory fees, deposits, and microscope rental fee. (See Biology, Botany, and Zoology, page 133; Chemistry, page 139; Family Resources (Home Economics) page 154; Geology 168; Physics, page 185; Psychology, page 192).

Fees for Extension Courses

A fee of $12.00 per semester hour and an off-campus extension fee of $12.00 per course are charged for enrollment in each extension course. Fees for extension courses are due and payable at or prior to the first class meeting.

Fees for Undergraduate and Graduate Music Students

Full-Time

Resident students	$140.00 per semester
Non-resident students	$455.00 per semester

Part-Time

Resident students	$ 8.00 per semester hour (includes $4.00 per semester hour Registration Fee.)
Non-resident students	$32.00 per semester hour (includes $16.00 per semester hour Registration Fee.)

Full-time or part-time students registered for Bachelors' or advanced degrees in Music or Supervisory Training Program in Music shall pay the regular full-time or part-time tuition and registration fee for all courses in music. No additional fees are assessed for Applied Music.

[1]This fee is not charged to students who complete registration during the regular registration days as set forth in the University Calendar. This fee became effective September 1, 1960.

[2]The Graduation Fee is payable by all students at the beginning of the semester or term in which they expect to receive their degrees.

[3]One transcript of a student's record is furnished by the Registrar without charge. This fee is charged for furnishing an additional transcript.

[4]If the applicant applies for admission to and registers in the University within twelve months of the date for his qualifying for the test, a $10.00 credit shall be established for him.

[5]For graduate students not otherwise enrolled at time of final examination.

Students registered in other colleges or schools, including the Graduate School, may enroll in class courses in music at the regular full-time or part-time fee per credit hour. These students may also enroll for Applied Music for a maximum of one half-hour lesson per week for one hour credit. The fee for this Applied Music instruction shall be $20.00 in addition to the aforementioned tuition and registration fee.

Practice and Rental Fees

(a) Practice room—one hour a day, $6.00 per semester; two hours, $10.00; three hours, $14.00; four hours, $18.00.
(b) Pipe-organ practice—one hour a day, $10.00 per semester.
(c) Band and orchestra instruments—rental fee $2.50 per semester.

Student Union Fee and Daily Athenaeum Fee

Effective with the beginning of the 1967 Summer Session, the following fees will be charged all students, full-time and part-time, who are enrolled for regular courses of resident instruction at West Virginia University in Morgantown:

Student Union Fee	$20.00 per semester
Daily Athenaeum Fee	$ 1.50 per semester
Student Union Fee	$12.00 per full Summer Session
Daily Athenaeum Fee	$ 1.00 per full Summer Session

These fees are non-refundable unless the student withdraws officially before the close of General Registration for the term or course in which he has been enrolled.

SEMESTER FEES

A part-time student (graduate or undergraduate) enrolled for courses in two or more colleges and schools shall pay fees at the rate per semester hour effective for the number of hours in each college or school.

If the student (graduate or undergraduate) is enrolled for 12 or more hours in courses offered by two or more colleges and schools, but less than 12 in any one, he shall be considered to be a full-time student and shall pay the fees for special services (Athletics, Health and Counseling Services, Student Educational Services, Daily Athenaeum, Student Union, and University Fee) in addition to the part-time rates per hour for courses in each college and school.

If the student (graduate or undergraduate) is enrolled for 12 or more hours in courses offered by colleges and schools in Group I, he shall pay the full-time rate effective for Group I. (Does not include Applied Music for students who are not candidates for degrees in Music.) This student shall pay the part-time rate for any courses in colleges and schools in Group II and Group III.

If the student (graduate or undergraduate) is enrolled for 12 or more hours in courses offered by colleges and schools in Group I, he shall pay the full-time rate effective for Group II and may elect courses in colleges and schools in Group I at no additional cost or may elect courses in colleges and schools in Group III at the part-time rate effective for Group III. (Does not include Applied Music.)

If the student (graduate or undergraduate) is enrolled for 12 or more hours in courses offered by colleges and schools in Group III, he shall pay the full-time rate effective for Group III and may elect courses in Group I or Group II at no additional cost. (Does not include Applied Music.)

The wife (or husband) of any person employed full time by the West Virginia University Board of Governors for a faculty position with the rank of instructor or above, or for a research position of equivalent rank, or as the administrative head of a University division, or as an assistant administrative head, shall be charged the same fees as resident students. The dependent children of the person so employed shall also be charged the same fees as resident students.

Effective from the date of employment, any full-time employee of West Virginia University on a regular appointment approved by the Board of Governors shall be charged the same tuition and fees as resident students.

SEMESTER FEES IN THE COLLEGES AND SCHOOLS
(See Footnotes 6, 7, 8, 9, 10)

	Full Time		Part Time (Per Semester Hour)	
	Resident	Nonresident	Resident	Nonresident
GROUP I Agr. and For. Arts and Sciences Commerce Creative Arts Center (Music, Art, Drama) Engineering Human Resources and Education Journalism Mines Physical Education	$90.00* plus Registration Fee of $50.00.	$255.00* plus Registration Fee of $200.00.	$8.00** per semester hour.	$32.00*** per semester hour.
GROUP II Dental Hygiene Law Medical Technology (Jr. and Sr. Years) Nursing Pharmacy	$105.00* plus Registration Fee of $50.00.	$280.00* plus Registration Fee of $200.00.	$9.00** per semester hour.	$33.00*** per semester hour.
GROUP III Dentistry Medicine	$167.00* plus Registration Fee of $50.00.	$385.00 plus Registration Fee of $200.00.	$12.00** per semester hour.	$42.00*** per semester hour.

*Includes Athletics Fee $8.25; Student Educational Services Fee $4.00; Daily Athenaeum $1.50; Health and Counseling Services Fee $12.00; Student Union Fee $20.00; University Fee $4.25.

**Includes $4.00 per semester hour Registration Fee.

***Includes $16.00 per semester hour Registration Fee.

Parkersburg Center of West Virginia University: $15.00 per semester hour.

Kanawha Valley Graduate Center (Institute, W. Va.): $50.00 per semester hour.

Summer Session Fees

	Resident	*Non-Resident*
Tuition, per semester hour (Agriculture and Forestry; Arts and Sciences; Commerce; Creative Arts Center; Engineering; Human Resources and Education; Journalism; Mines; Physical Education)	$ 8.00*	$32.00**
Tuition, per semester hour (Dental Hygiene, Law, Medical Technology, Nursing, Pharmacy)	9.00*	33.00**
Tuition, per semester hour (Dentistry and Medicine)	12.00*	42.00**
Daily Athenaeum Fee††	1.00	1.00
Health and Counseling Services Fee†	7.00	7.00
Student Union Fee††	12.00	12.00
Student Educational Services Fee†	2.00	2.00
University Fee†	2.00	2.00

*Includes $4.00 per semester hour Registration Fee.

**Includes $16.00 per semester hour Registration Fee.

†Non-refundable fees required of full-time students. May be paid by part-time students who desire the services. Part-time students who elect to pay these fees must pay the same amount assessed full-time students.

††Fee required of all students. (Non-refundable unless student withdraws officially before the close of general registration).

COST OF AN ACADEMIC YEAR'S WORK

A student's textbooks will cost approximately $100 a year, and his registration fees $280 to $434 if he is a resident; or $910 to $1,170 if a nonresident. Students in engineering will use drawing instruments costing from $15.00 to $30.00. Non-refundable fees range from $2.00 to $20.00. In military science and Air Force aerospace studies a $20.00 deposit is required to cover military equipment in the custody of the student, practically all of which is returned to the student when he accounts for his equipment. Board and room may be obtained at from approximately $780 to $880 a year. Traveling expenses, clothing, and other miscellaneous items will depend largely upon the taste and habits of the individual student. In general, however, it may be said that the legitimate cost of a 9-month term of residence at the University ranges from $1,450 for resident students to $2,250 for non-resident students.

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[6]A full-time student is one who is registered for 12 or more semester hours of work each semester of the regular acadmic year, or 9 semester hours of work during the Summer Session. A full-time student during the regular academic year receives an Identification Card which entitles him to all athletic events. A full-time student during the regular academic year or during the Summer Session is entitled to free medical consultation and advice from the University physician. A moderate charge is made for room calls, X-rays, special laboratory tests, drugs furnished by the University Pharmacy, minor operations, treatment of fractures and dislocations, and intravenous treatment.

[7]A part-time student is one who is registered for fewer than 12 semester hours per semester during the regular academic year, or for fewer than 9 semester hours during the Summer Session.

[8]No person shall be considered eligible to register in the University as a resident student who has not been domiciled in the State of West Virginia for at least twelve consecutive months next preceding college registration. No non-resident student may establish domicile in this State, entitling him to reduction or exemptions of tuition, merely by his attendance as a full-time student at any institution of learning in the State. A minor student whose parents acquire a West Virginia domicile after the student's original registration will be deemed to have the domicile of his parents and become entitled to pay resident fees. Moreover any student who has originally paid non-resident fees may become entitled to pay resident fees, if after an interim of non-attendance or otherwise he has established a valid legal domicile in this State at least twelve months prior to his registration in the University. In any event, the appointment of a guardian for a minor student temporarily resident in West Virginia, other than the designation of a natural guardian, shall not in and of itself operate to establish a West Virginia domicile for such student.

[9]The minimum rate for non-credit courses is that charged for one semester hour of credit.

[10]Athletics Fee, Student Educational Services Fee, Health and Counseling Services Fee, and University Fee, all chargeable to Special Services, non-refundable during this period. Student Union Fee and Daily Athenaeum Fee non-refundable unless the student withdraws officially before the close of General Registration.

Refunding of Fees

A student who officially withdraws from the University may arrange for a refund of fees by submitting to the University Comptroller evidence of approval of the refund by the Registrar.

To withdraw officially a student must apply to the Registrar for permission. Semester fees will be returned in accordance with the following schedule:

First refund period ending on the second Saturday following the beginning of General Registration.	50% of Athletics Fee, Student Educational Services Fee, Health and Counseling Services Fee, and University Fee, all chargeable to Special Services; and all other semester fees less $2.50. (Under no circumstances is the amount retained less than $2.50).
Second refund period ending on the fourth Saturday following the beginning of General Registration.	50% of Athletics Fee, Student Educational Services Fee, Health and Counseling Services Fee, and University Fee, all chargeable to Special Services; and 80% of all other semester fees.
Third refund period ending on the sixth Saturday following the beginning of General Registration.	60% of semester fees not chargeable to Special Services.[10]
Last refund period ending on the eighth Saturday following the beginning of General Registration.	40% of semester fees not chargeable to Special Services.[10]

The second Saturday following the beginning of general registration for a semester is the end of the first refund period. The second Saturday following the beginning of general registration for a summer session is the end of the refund period.

General Registration for full-time students for the First Semester is considered to be the first two days of the semester; for the Second Semester, the first two days of the semester; and for the Summer Session, the first day of the session.

General Registration for part-time students for the First and Second Semesters is considered to extend until the close of office hours on the second Saturday following the beginning of registration and for the Summer Session until the close of the eighth day of the session.

The University Board of Governors has ordered that students called to the armed services of the United States be granted full refund of refundable fees, but no credit, if the call comes before the end of the first three-fourths of the term, and that full credit by courses be granted to men called to the armed services of the United States if the call comes thereafter; provided, however, that credit as described above will be granted only in those courses in which the student is maintaining a passing mark at the time of his departure for military service. In the recording of final grades, for three-fourths of a term or more, both passing and failing grades are to be shown on the student's permanent record card.

Service Charge on Returned Checks

A service charge of 5 per cent of the amount of each check returned unpaid by the bank upon which it is drawn shall be collected unless the student can obtain an admission of error from the bank.

If the check returned by the bank was in payment of University and registration fees, the Comptroller's office shall declare the fees unpaid and registration cancelled if the check has not been redeemed within three days from date of written notice. In such a case the student may be reinstated upon redemption of the check, payment of the 5 per cent service charge, and payment of a late payment fee of $10.00.

Registration

Persons not registered as University students and who are not members of its administrative or teaching staffs shall not be admitted to regular attendance in University classes.

All students are expected to register on days set apart for registration at the beginning of each semester or session of the University.

Immediately after completion of registration, all students must pay fees at the Comptroller's desk in the Field House Annex (South).

LATE REGISTRATION

No student will be permitted to register at the University after the eighteenth day of a semester or the eighth day of the Summer Session. No student registering late will be permitted to enroll for more hours of work than the number of weeks in actual attendance without the permission of the Committee on Scholarship of the college or school concerned.

AUDITORS

Students may enroll in courses without working for grade or for credit by registering as auditors and by paying full fees. Credit or audit status must be indicated at the time of registration. *No change in status from audit to credit or from credit to audit will be made at any later date.*

VISITORS

Full-time University students may attend classes as visitors, provided they obtain the written permission of their advisers and of the instructors in classes they desire to visit. Members of the administrative or teaching staffs, or other regular employees of the University, may attend classes as visitors provided they obtain written permission of the chairmen of their departments and of the instructors in the classes which they desire to visit.

No record is kept of the work and attendance of persons admitted to classes as visitors and no credit is given for their work in such classes.

Persons eligible to attend classes in the University as visitors may obtain the proper blanks from the Registrar.

Regulations Affecting Degrees

Candidates for degrees are eligible for graduation when they complete the requirements in the college or school in which they are registered which were in effect at the time of their first registration in that college or school, provided they apply for graduation within a period of seven years from the time of their first registration. Students who fail to complete the requirements for graduation within seven years from their first registration shall satisfy the requirements in effect at the time they apply for graduation.

The University Board of Governors has ordered that in view of public and professional responsibilities the faculty of each of the professional schools of West Virginia University shall have the authority to drop any student from its rolls whenever, by formal decision reduced to writing, the faculty finds that the student is unfitted to meet the qualifications and responsibilities of the profession.

All degrees are conferred by the Board of Governors upon recommendation of the faculties of the various colleges and schools. Degrees are granted at the close of the semester or summer session in which the students complete their work.

Candidates for degrees to be conferred at the close of the second semester must be present in person to receive their degrees unless excused by the deans of their colleges and schools. No individual may be exempt from the provisions of this University regulation except by official action of the Board of Governors.

BACCALAUREATE DEGREES

Credits and Grade Points Required

Less than 6 hours in an ancient or modern language will not be counted toward any University degree, diploma, or certificate unless work in the same language has been offered for entrance.

Six hours of English composition and rhetoric (English 1 and 2) are required of all candidates for the Bachelor's Degree in all colleges and schools of the University.

Eight hours of basic military science or Air Force aerospace studies are required of all freshman and sophomore men not specifically exempt.

Two hours of physical education for men (P.E. 1 and 2), to be taken during the first year in residence, and four hours of physical education for women, to be taken during the first and second years in residence, are required for graduation, except in the case of students entering with advanced standing amounting to 58 semester hours or more. (See page 49 for specific requirements.)

Each baccalaurate degree is conditioned upon the completion of a specified number of semester hours of credit. For a tabular statement of the number of credit hours required for each degree, see the last column on pages 55-57 under the heading "Classification of Students."

All divisions of the University require minimum standards of scholastic quality. Grade points are computed only on grades earned at West Virginia University (including Potomac State College of West Virginia University). To be eligible for graduation, a student must have an average of "C" or an average of two grade points on all work for which he received grades (except "W" and "WP"). The College of Human Resources and Education, in addition to the general average of two grade points per credit hour in all subjects, requires an average of two grade points per hour of credit in Education and in each teaching field.

It is the student's responsibility to keep informed of his grade-point standing. This information may be obtained at any time from the dean of the college or school in which the student is registered.

University Core Curriculum Requirements

All undergraduates who entered the University for the first time in September, 1964, or later must complete the following University Core Curriculum requirements in order to graduate:

I. Two semesters' work in English composition, exclusive of English 0.

(a) Students demonstrating special ability in English will be excused from English 1 and 2, the number of students and the mechanics of selection to rest with the Department of English.

(b) No credit will be granted for courses from which a student is excused.

(c) Students excused from English 1 and 2 will be required to take 6 hours of other courses, the selection of same to rest with the student with the advice and consent of his adviser.

II. Remedial work in mathematics to cover the deficiency if the student, upon entering the University, lacks proficiency in mathematics equal to that normally attained in two years of high school mathematics.

III. Twelve credit hours of work in selected approved courses in each of the three following disciplinary areas, including courses in at least two subjects in each group:

Group A: Art; foreign languages and literature, including Latin and Greek (above the elementary level); literature of the English language; philosophy, religion, humanities.

Group B: Economics, geography, history, psychology, political science, social science, sociology.

Group C: Biological sciences (biology, botany, zoology, genetics), chemistry, geology, mathematics, physical sciences, physics.

Courses taken to fulfill the core curriculum requirements will be selected from a list to be prepared by the University Core Curriculum Committee. The list will include one or more courses in each of the above named disciplines and may also include both interdisciplinary courses and courses in disciplines closely related to those named. Honors courses in the General Education area and administered as a part of the University honors program will count toward the Core Curriculum requirements. Students in certain curricula, if required to take Military Science or Aerospace Studies will be excused from a part of the Core Curriculum requirements at the discretion of the President of the University.

Physical Education General Program

All students entering the University with less than 58 semester hours of college credit are required to complete the requirements in physical education, unless previous credit is allowed. All men students take 2 hours of physical education courses, Phys. Ed. 1 and 2, during their first year of residence. All women students take 4 hours of physical education courses during their first two years of residence. Phys. Ed. 3 is required of all freshman women. To complete the 4-hour requirement, students elect one course from each of the following groups:

Group 1—Phys. Ed. 14, 15, 16	(Swimming)
Group 2—Phys. Ed. 5, 11, 17, 18	(Dancing)
Group 3—Phys. Ed. 4, 7, 8, 9, 10, 13, 21, 25	(Individual or Team Sports)

The University Health Service will determine whether students are physically qualified for required physical education courses and for active participation in other University activities.

English Proficiency Requirement

Undergraduate Students Entering the University After June 1, 1964. Who Are Candidates for an Initial Baccalaureate Degree

All such students who have completed English 2 at West Virginia University with less than a "C" grade will be required either to retake English 2 and establish a "C" or better grade, *or* take a college-level English proficiency examination to be administered by the English Proficiency Board. No student may proceed to the upper division (junior year) until he has attained a "C" or better grade in English 2 at West Virginia University *or* a passing score in the English proficiency examination.

Transfer students will be required to take the English proficiency examination in the first semester of their residence. Those who fail to pass the examination must take English 2 at West Virginia University and establish a grade of "C" or better *or* pass the English proficiency examination within the first two semesters of their residence. Thereafter, they will be ineligible to continue other course work toward a degree or to graduate until the English proficiency requirement is satisfied.

Undergraduate Students Entering the University Before June 1, 1964. Who Are Candidates for an Initial Baccalaureate Degree

To qualify for graduation, all such students, including transfer students, are required either to complete English 2 at West Virginia University with a grade of "C" or better *or* to pass the English proficiency examination.

The foregoing regulations do not apply to students of foreign countries whose native language is other than English.

Division of Military Science and Division of Air Force Aerospace Studies

Requirements

West Virginia University, a beneficiary of the Act of Congress of 1862, offers in time of peace four-year courses of instruction in Military Science and Aerospace Studies. Normally successful completion of one of these courses and degree requirements leads to a commission as Second Lieutenant in the United States Army Re-

serve, or the United States Air Force Reserve. Distinguished military graduates of West Virginia University may apply for and be offered commissions as second lieutenants in the Regular Army or the Regular Air Force, under conditions prescribed by law.

The course comprises two years of basic training (Military Science 1, 2, 3, and 4, or Aerospace Studies 1, 2, 3, and 4); two years of advanced training (Military Science 105, 106, 107, 108, or Aerospace Studies 105, 106, 107, and 108); and summer camp for six weeks' duration for Military Science students and four weeks' summer training for Air Force students during the summer following the junior year. The Army summer camp and Air Force summer training is conducted at government expense, and eligible students are paid approximately $150 monthly in addition to traveling expenses at the rate of 6 cents per mile.

All male students not specifically exempt by provisions of the appropriate paragraph below are required by Chapter 18, Article 11, of the official *Code* of West Virginia, and by orders of the Board of Governors of the University, to complete satisfactorily the entire basic course as prerequisite to graduation from the University.

Within deferment quotas established by Public Law 758, 80th Congress, qualified and selected enrolled students are offered the opportunity of being deferred by the Professor of Military Science or the Professor of Aerospace Studies from military service under the Selective Service Act of 1948 and Selective Service Extension Act of 1950, as amended by the Universal Military Training and Service Act, November, 1951, as amended, until completion of their military courses and receipt of the baccalaureate degree. Such deferment is subject to cancellation should the student not be selected for the advanced course, fail to remain in good standing, or fail to develop the qualities expected of an officer.

Transfer Junior level students may apply for the Advanced ROTC commissioning programs through the Professor of Military Science or the Professor of Aerospace Studies not later than April. They must participate in six weeks summer training at a designated Army or Air Force installation prior to the fall semester. During this training the students will be paid at the rate of approximately $90.00 per month, with travel pay at 6 cents per mile to and from training.

Curriculum

General Military Course, Air Force Aerospace Studies: Instruction averages two hours per week throughout the four semesters. Corps Training is accomplished during two hour periods in the first half of each fall term. Spring term Corps Training is accomplished during one hour classroom periods throughout the semester. Two credit hours is allowed for each of the four semesters' work.

Basic Course, Military Science: Instruction averages two hours per week for the two semesters of the freshman year and three hours per week for the two semesters of the sophomore year. One hour per week (two for sophomores) is conducted in the classroom and for half of each semester (first half of the first semester, last half of the second semester) a two-hour laboratory is conducted each week in which the student receives instruction in drill and command. These laboratories are held Tuesday and Friday. Two hours credit is allowed for each semester's work.

Advanced Course (Army)—Professional Officer's Course (Air Force): The third and fourth years of instruction in Military Science or Aerospace Studies correspond to the junior and senior years of the student's academic course. Entrance into either program is elective on the part of the student and selective on the part of the services. Selection is based on the student's record and on service regulations and in both services is limited in total numbers by yearly quotas. Application for either program should be made at the beginning of the second semester of the student's sophomore year. A student must complete the basic Army or Air Force course, or if transferring from a college or university not offering ROTC, complete a six-week summer camp prior to entering Military Science 3 or Aerospace Studies 3. Eligibility for either program begins with successful completion of an officer's qualifying test in the first semester of the sophomore year. All candidates must pass a physical examination and meet a selection board in the second semester of the sophomore year. A grade-point average of 2.0 is one of the prerequisites for enrollment in either program.

Each student who is enrolled in either program agrees to complete the course including summer camp and, if tendered, accept a commission as a second lieutenant

in the U.S. Army or Air Force as a prerequisite for graduation from the University, unless excused by proper authority.

Senior Aerospace Studies students enrolled as Category I (Pilot) are required to participate in the Flight Instruction Program. This program consists of 35 hours of ground instruction and 36½ hours of dual and solo flight instruction for the private pilot's license. Senior Military Science students may also participate in the flight instruction program. There are no additional fees for this program.

Organization

The conduct of military science and aerospace studies instruction is the responsibility of the Professor of Military Science and the Professor of Aerospace Studies, who, together with their military staffs, are officers and non-commissioned officers of the U.S. Army and the U.S. Air Force on duty at West Virginia University.

ROTC Financial Assistance Program

Both the Air Force and the Army grant a substantial number of full scholarships to selected students, to include full tuition, textbooks, laboratory fees, and an allowance of $50.00 per month.

Air Force scholarships are granted for from one to four years. Army scholarships are granted for either two or four years.

Allowances

The Advanced Course (Army) or Professional Officer's Course (Air Force) student (other than scholarship students) is paid an allowance of $40.00 per month.

Uniforms, equipment, and ROTC student textbooks are issued to all cadets.

Deposit

All ROTC students are required to pay a deposit of $20.00 to cover any loss or damage to issued property in his possession. The deposit is paid to the University Comptroller at time of registration and is refunded, less a nominal administrative charge, upon return of the undamaged property. Cadets in both officer commissioning programs are permitted to retain their uniforms upon successful completion of the program.

Exemptions

The following students will not be required to enroll in the Division of Military Science or Division of Aerospace Studies, but may elect to do so with the approval of the Professor of Military Science or the Professor of Aerospace Studies:

(1) Those who are not citizens of the United States.
(2) Graduate students.
(3) Students who are taking only short courses, the special interim courses, or extension work.
(4) Transfer students who at the time of matriculation have established 58 semester hours with the Registrar of the University.
(5) Students who have successfully completed the two-year basic Army, Navy, or Air Force ROTC course at any institution maintaining a Senior Division unit. Those who have satisfactorily completed one, two, three, or four semesters of ROTC training in a senior division will be allowed comparable hours credit and exemption from comparable military training.
(6) Students who are more than 24 years and 3 months of age on day of registration.
(7) Students who are physically unable to perform military training.

Students who have had previous training, other than a senior division ROTC unit, will be allowed exemption from military training as determined by the Professor of Military Science, or the Professor of Aerospace Studies, and the Registrar. Scholastic hours credit will be allowed for military training for which a student is exempted. Students applying for entrance who have had previous ROTC training should request the institution where such training was received to submit the pertinent ROTC student's records to the University prior to the date of registration.

Students with more than four months of continuous active and honorable active service in one of the armed forces are exempted from taking basic military training (i.e., Military Science or Aerospace Studies 1, 2, 3, 4). Scholastic hours credit will be allowed for military training for which a student is exempted. See "Courses of Instruction" (Part III of this bulletin) for Military Science and Aerospace Studies.

Exemptions will be determined by the Director of the Student Health Service (physical exemptions), and the Professor of Military Science or the Professor of Aerospace Studies, who will notify the Registrar and the student's adviser.

Graduation With Honors and High Honors

Effective June 1, 1949, the University established the practice of awarding "Honors" and "High Honors" to qualified students who are candidates for the initial baccalaureate degrees. The following regulations govern these awards:

1. The computation of the average shall begin with the student's penultimate term or semester and continue in reverse chronological order until at least 48 semester hours have been counted. If, in order to total the required number of hours it is necessary to include any part of a semester or term, the work of the whole semester shall be included.
2. No graduate shall be eligible for honors unless he shall have completed at least half of the semester hours required for his degree in West Virginia University.
3. Enrollment at the University is required during the senior year.
4. No graduate shall be eligible for honors if his grade-point average for his final semester or term is less than 3.0.
5. Subject to the above conditions, all candidates for a baccalaureate degree whose average, as shown by the portion of the work used, is 3.6 or above, shall be graduated with "High Honors." All those whose average is less than 3.6 but 3.3 or above, shall be graduated with "Honors."
6. Fitting recognition of graduation with honors shall be made on the candidate's diploma and on the commencement program.

Requirements as to Residence

Students who come to the University from other colleges or universities should make the transfer not later than the beginning of their third year and in no case will a student who matriculates in the University later than October 1 in any year be permitted to receive a degree at the next commencement.

In special cases students who desire to leave the University at the close of their third year to enter another institution with the purpose of taking a combined course leading to two degrees or of preparing for graduate study, upon application beforehand to the Committee on Scholarship of the college or school in which they are registered, may be permitted to do the work of the fourth year, or a part thereof, at such other institution and to receive the Bachelor's Degree from the University upon the presentation of the proper credits.

Except in the College of Law, no student will be granted a Bachelor's Degree by the University who has not done either a total of 90 hours or the last 30 hours of his work in actual residence at the University. No student may receive the Degree of Bachelor of Laws without at least three semesters in residence at the College of Law and the successful completion of courses aggregating at least one-half of the total number of hours required for graduation. Except with the permission of the Scholarship Committee, the last 27 hours of work must be taken in the College of Law of West Virginia University.

College Credit Defined

A college credit or semester hour represents the amount of work done in one recitation hour per week for the duration of a semester. Normally a student will spend two hours preparing for an hour recitation period. As a rule, two to three hours of laboratory work are equivalent to one hour of recitation.

Maximum and Minimum Work

The maximum and minimum number of hours per semester as well as the maximum number of hours per year for which a student may register during the regular academic year of the University are as follows:

	Minimum Hours Per Semester	*Maximum Hours Per Semester*	*Year*
Agriculture	14	20	
Arts and Sciences	14	18	
Commerce	14	18	
Creative Arts Center	14	21	
Dentistry	16	22	
Engineering	14	20	
Family Resources	14	18	34
Forestry	14	20	
Human Resources and Education		18	36
Journalism	14	18	36
Law	13	16	
Medicine	17	20	
Mines	12	20	
Nursing	14	20	
Pharmacy	14	20	
Physical Education	14	20	

A student desiring to do irregular work, more or less than the prescribed number of hours in any college, must obtain permission from the Committee on Scholarship in his college or school. This permission is not valid until it has been reported to the Registrar for record.

Work Done Out of Residence

It is the policy of the University to discourage the taking of regular residence courses in absentia. In the case of courses begun at the University and not completed because of illness or for other acceptable reasons, however, permission to complete the work in absentia under the direction of regular University instructors may be granted by the Committee on Scholarship; but in such case credit should be given only upon a report of a grade of no less than "C" on final examination.

This regulation does not apply to University extension courses.

Approval in writing must be secured in advance to elect courses offered elsewhere. An overall average of "C" is required on all work attempted at the University in order to obtain such approval. Credit will be accepted for transfer for courses carrying a grade of "C" or higher when the conditions indicated above have been met.

Credit for Correspondence Work

Credit up to a maximum of 30 semester hours for work completed by correspondence in non-laboratory courses will be accepted by the University when such work is given by accredited colleges or universities that accept this work for credit toward their own degrees and whose residence work is accepted by West Virginia University.

Substitution for Required Courses

A student who desires to substitute another course for any course prescribed in his curriculum or required for the degree toward which he is working must obtain permission for such substitution from the Committee on Scholarship in his college or school, but there can be no substitution from group to group.

Withdrawal from the University

A student who desires to withdraw from the University must obtain a withdrawal card from the office of the Registrar, 205 Administration Building. Withdrawal procedure will be explained to him when he obtains this card.

Students who withdraw without permission will receive at the end of the semester a grade of "F" (failure) in each of the courses for which they are registered and will be indefinitely suspended from the University.

Students who desire to drop part of their work may withdraw from classes in which they are enrolled with a grade of "W" at any time prior to the end of the fourth week of the semester. Withdrawal permits must be approved by the adviser and accepted by the Registrar. If such withdrawal reduces the student's hours below the required minimum, the permit must be approved by the Scholarship Committee. Withdrawals after the above date will be permitted only in exceptional cases and must be approved by the Scholarship Committee of the college or school in which the student is registered.

Students must present a signed statement from the Librarian that they have returned all books and paid all library fines before they will be allowed to withdraw.

Re-Entry After Withdrawal

Students required to withdraw from one college or school of the University because of failure in their work and permitted to transfer to another unit of the University may not again register in the college or school in which they were originally registered without the consent of the Scholarship Committee of that college or school.

EXAMINATIONS AND REPORTS

Courses

As a rule courses extend through one semester only, though some are of a year's duration. No credit will be given for less than an entire course except by special order of the Committee on Scholarship. Grades given at the end of the first semester in courses extending throughout the year are merely indicative of the quality of work done by the student to that point and do not give credit for the part of the course so far completed. Such first-semester grades may be considered in determining the final grade, however.

Examinations

During the progress of a course short tests and hour examinations are given by the instructor during regular recitation or laboratory periods. Final examinations are held during the last week of each semester of the academic year and during the last two days of each Summer Session. A schedule published in the *Schedule of Courses* each semester sets the time for each final examination.

The following rules, to be enforced by the Provost, pertaining to final examinations were adopted by the University Senate, February 13, 1967.

1. All final examinations must be given according to the schedule published.
2. The only tests permitted during the week of classes preceding finals will be practical laboratory tests, which by their nature must be given in the laboratory.
3. There shall be a reading period of at least one day between the last day of classes and the first day of scheduled examinations.
4. If a student has more than three final examinations on one day because one of them is a departmental final examination, he may take a substitute examination for the departmental examination during the reading period.

Absence from Examinations

Students are required to take all regular examinations. If a student attends a course throughout the semester and is absent from examination without permission, the instructor shall count the examination as zero and report the final grade as "F." If, in the opinion of the instructor, absence of the student was for satisfactory reason, the fact will be recorded on the student's class ticket, the grade "I" will be returned, and the student may, upon application to the instructor, take the examination at a later date.

Reports

In the seventh week of classes of each semester, instructors in all undergraduate courses shall submit a report of students doing unsatisfactory work, that is, earning grades of "D" or "F". These grades are to be used for counseling and are not recorded on the student's permanent record in the Registrar's Office. These reports are to be sent to the Registrar or his representative, and this information shall be transmitted to the student, parent or guardian, adviser, and dean of the college.

Final grades are reported by instructors directly to the Computer Center within 48 hours after the closing of the examination. The rule also applies to the final grades of all students registered in other colleges or schools of the University who are enrolled in law courses.

The final standing of all seniors provisionally approved for graduation at the close of the second semester shall be reported by their instructors to the deans of their colleges and schools, and the final standing of all graduate students provisionally approved for graduation shall be reported to the Dean of the Graduate School. Special report cards are supplied by the Registrar.

A report of each student's work is made at the close of the semester or summer session to the student himself or to his parents or guardian.

CLASSIFICATION OF STUDENTS

The following table shows the number of semester hours required for classification as second-year, third-year, and fourth-year students and for graduation in the several colleges, schools, and divisions. First-year students must satisfy the requirements as set forth beginning on page 35.

COLLEGE AND DEGREE	HOURS REQUIRED TO CLASSIFY AS Second-Year Student	Third-Year Student	Fourth-Year Student	Required for Degree
Agriculture and Forestry				
B.S. (Bachelor of Science)	26	64	100	144
B.S. in Agriculture (B.S.Agr.)	26	64	100	144
B.S. in Forestry (B.S.F.)	30	70	110	150
B.S. in Wood Science (B.S.W.S.)	30	60	95	138
Agricultural Engineering				
B.S. in Agr'l. Eng'g. (B.S.Agr.E.)	30	72	112	145
Arts and Sciences*				
Bachelor of Arts (A.B.)				
Regular	25	58	92	128
Premedical	32	58	96	128
Combined (Dentistry)[11]	32	58	96	132
Combined (Medicine)[12]	32	58	96	132
Bachelor of Science (B.S.)				
Geology	32	58	99	132
Chemistry	34	69	103	136
Nursing Education	25	58	92	128
Physics	34	69	103	136
Social Work	25	58	92	128
Commerce				
B.S. in Bus. Ad. (B.S.Bus.)		58	92	128
B.S. in Economics (B.S.Ec.)		58	92	128

*Unless otherwise stated, a minimum of 128 hours is required for all degrees awarded by the College of Arts and Sciences. This must include at least 124 hours exclusive of required Physical Education and required Military Science or Aerospace Studies.

[11]Fourth year in the School of Dentistry.

[12]Fourth year in the School of Medicine.

COLLEGE AND DEGREE	HOURS REQUIRED TO CLASSIFY AS Second-Year Student	Third-Year Student	Fourth-Year Student	Required for Degree
Creative Arts Center				
MUSIC				
Bachelor of Music (B.Mus.)	30	64	102	136
ART				
B.A. in Art (A.B.)	30	64	102	136
DRAMA				
Bachelor of Fine Arts in Drama (B.F.A.)	30	64	102	136
Dentistry				
Doctor of Dental Surgery (D.D.S.)	33	70	106	142
B.S. in Dental Hygiene (B.S.D.H.)	30	65	101	136
Engineering[13]				
Bachelor of Science	27	60	94	133
B.S. in Aerospace Eng'g. (B.S.A.E.)	30	68	100	144
B.S. in Chem. Eng'g. (B.S.Ch.E.)	30	68	100	146
B.S. in Civil Eng'g. (B.S.C.E.)	30	68	100	149
B.S. in Elec. Eng'g. (B.S.E.E.)	30	68	100	143
B.S. in Ind. Eng'g. (B.S.I.E.)	30	68	100	146
B.S. in Mech. Eng'g. (B.S.M.E.)	30	68	100	141
Human Resources and Education[14]				
B.S. in Elem. Educ. (B.S.E.Ed.)		58	92	128
B.S. in Secondary Educ. (B.S.Sec.Ed.)		58	92	128
B.S. in Speech Pathology and Audiology (B.S.)	34	68	104	128
B.S. in Home Economics (B.S.H.E.)		58	92	128
Journalism				
B.S. in Journalism (B.S.J.)		58	92	128
Law				
Bachelor of Laws (LL.B.)	27	54		81
Medicine				
Doctor of Medicine (M.D.)	36	72	†	‡
B.S. in Medical Technology (B.S.Med.Tech.)	25	58	100	135
Mines				
B.S. in Eng'g. of Mines (B.S.E.M.)	30	72	112	154
B.S. in Petroleum Eng'g. (B.S.Pet.E.)	30	72	112	154
Nursing				
B.S. in Nursing (B.S.Nsg.)	30	64	96	133

†At least 3 quarters of clinical work.
‡At least 7 quarters of clinical work.
[13]Students matriculating with 58 or more hours of credit may graduate without credit for Physical Education, thus reducing the total hours required for graduation.
[14]For the Degrees of Bachelor of Science in Education, at least 10 hours of residence work must be in Education.

COLLEGE AND DEGREE	HOURS REQUIRED TO CLASSIFY AS Second-Year Student	Third-Year Student	Fourth-Year Student	Required for Degree
PHARMACY				
B.S. in Pharmacy (B.S.PHARM.)		32††	64††	96
PHYSICAL EDUCATION				
Bachelor of Science in Physical Education (B.S.P.E.)	28	58	92	128
Bachelor of Science in Recreation (B.S.REC.)	28	58	94	130

††32 hr. 4th year of 5-year program. 64 hr. 5th year of 5-year program.

SCHOLASTIC STANDING AND GRADE POINTS

GRADING SYSTEM

A—excellent (given only to students of superior ability and attainment)
B—good (given only to students who are well above average, but not in the highest group)
C—fair (average students)
D—poor but passing[15]
F—failure
I—incomplete
W—all withdrawals prior to the end of the fourth week of the semester
WP—withdrew passing after completion of the fourth week of the semester
WF—withdrew failing after completion of the fourth week of the semester
X—auditor, no grade and no credit

ABSENCES

Students are obligated to attend all classes, including laboratory sessions, for which they are registered. The student who is absent for any reason is responsible for work missed. Instructors are expected to report excessive absences to the dean and adviser. Students should understand that absences jeopardize their grade or continuance in the course.

GRADE POINTS

The grade-point average is computed on all work for which the student has registered, except for the courses with grades of "W," "WP," and "X" and is based on the following grade-point values:

A	B	C	D[16]	F	WF	I
4	3	2	1	0	0	0

Provided, however, that when a student receives a grade of "I" and later removes the incomplete grade, his average grade-point standing shall be calculated on the basis of the new grade.

If the final grade of a student in any course is "F," the student must take the course again in residence at the University if he desires to receive credit for it, unless the dean of the college or school authorizes the exception. The grade of "I"

[15]Veterans of World War II or Korea may register for courses in which they have a grade of "C" or higher, but no credit will be given for the new listing.

[16]Students, unless enrolled in the School of Dentistry, College of Law, School of Medicine, School of Nursing, or School of Pharmacy, are permitted to re-register at West Virginia University for any courses for which a grade of "D" has been received at West Virginia University while first-year students. (See pages 55–57 for classification of students). In such cases the second grade shall supersede the first, providing it is not lower than "D." All work attempted after the first year shall be included in the computation of the grade-point average for degree purposes.

For teacher certification the student is responsible for every registration in a course for which a grade of A, B, C, D, F, WF, or I is received.

The University grade-point average is computed on all work attempted in all years.

is given when an instructor believes that the course work is unavoidably incomplete or that a supplementary examination is justifiable. The grade of "I" must be removed within the following semester or the next semester in which the student is in residence, and becomes a failure unless special permission is granted by the appropriate Scholarship Committee to postpone removal.

Duties of Advisers

Each student on entering the University is assigned to an adviser. It is the duty of advisers to assist students in preparing schedules, to assign them to classes, and to certify their study lists to the Registrar. The adviser is expected to give to students assigned to him such advice and sympathetic guidance as they may need in the pursuance of their work in the University. Students are expected to go freely to their advisers to discuss with them their problems.

All advisers, upon receipt of reports of excessive numbers of absences, shall have conferences with the students concerned and shall make such recommendations and adjustments as are desirable and feasible. If the adviser does not find a satisfactory solution after a conference with the student, he shall report the case to the dean of the college or school.

Duties of Instructors

Each instructor shall be responsible for keeping an attendance record of students in his classes and shall report an excessive number of absences to the student's dean and his adviser.

Duties of Committee on Scholarship

The Committee on Scholarship shall have authority to proceed according to its best judgment in regard to delinquent students referred to it for consideration.

All orders of the committee shall become effective when approved by the dean of the college or school.

In the exercise of its authority the Committee shall not suspend a student during a semester except for willful neglect and in cases where the student's class grades are so low that further class attendance would be a waste of time. No suspension shall become effective until approved by the dean of the college.

Uniform Suspension Regulations

Any undergraduate student, as defined in the 1966 Faculty Handbook, whose total grade-point average is less than 2.00 but whose total grade-point deficiency is not large enough to cause him to be suspended, will be notified on his grade report from the Registrar that his academic performance is unsatisfactory. Any further action or restriction is entirely the prerogative of the individual college.

Any undergraduate student, as defined in the 1966 Faculty Handbook, with a grade-point deficiency which exceeds the maximum allowed by the uniform University regulation (see Table below) shall be subject to suspension by the dean of his college. This suspension is to be automatic in the sense that action is to be taken by the dean between semesters and will be based on a special report from the Registrar. The sequence of events bringing about this action is:

1. The Registrar will provide a special report at grade-reporting time. This report will consist of the necessary copies of a form letter addressed by the computer to each student whose grade-point deficiency exceeds the maximum allowed by the uniform University regulation.
2. The special reports will be forwarded to the college deans for college action signified by the dean's signature.
3. The Registrar will provide the Provost with a list of students subject to suspension in each college.
4. Deans will report to the Provost the action taken on the students reported to them for suspension by the Registrar.

Students who have been suspended may petition the scholarship committee of the college of enrollment after the next March 1st or October 1st to ascertain under what conditions, if any, they may be readmitted to that college.

A student suspended for academic reasons who fails to gain readmission to the college of his choice shall, upon application, be readmitted after one calendar year from the date of suspension, as a Remedial Studies student.

These suspension regulations supersede all other regulations for academic suspension.

Maximum Allowable Grade-Point Deficiency

Total Hours Attempted	Maximum Grade-Point Deficiency	Total Hours Attempted	Maximum Grade-Point Deficiency
0-20	32	61-65	13
21-25	26	66-70	12
26-30	20	71-75	11
31-35	19	76-80	10
36-40	18	81-85	9
41-45	17	86-90	8
46-50	16	91-95	7
51-55	15	96 and above	6
56-60	14		

Teacher Certification

In order to teach in the public schools of West Virginia, one must hold a certificate issued by the West Virginia State Department of Education. Before any West Virginia University applicant is eligible to receive a professional certificate, he must have:

1. Met the minimum State requirements.
2. Met the University degree requirements.
3. Been recommended by the Dean of the College of Human Resources and Education.
4. Completed the National Teacher Examination.

RETURNING BOOKS TO LIBRARY

Students must present a signed statement from the Librarian that they have returned all books and paid all library fines before withdrawing from the University or before graduation.

CAMPUS PARKING REGULATIONS

Students are required to observe all rules and regulations of the University concerning automobile parking. All information is available from the Information Desk, located in the lobby of the Administration Building.

IDENTIFICATION CARD

An identification card is issued to each full-time student. It entitles the owner to admission to certain University athletic events, various activities of student government, Health Service, and Mountainlair. Confiscation will result from misuse. The University reserves the right to refuse reissuance of an identification card.

PROCEDURAL RULES FOR HANDLING CHEATING CASES

Cheating is condemned at all levels and in all areas of life. Like a crippling malady, it leaves its mark subjectively. Cheating indicates a weakness and inability to meet and face the issues and problems of life. It creates an atmosphere of mis-

trust, disrespect and insecurity. The effects and influence of cheating will necessarily be reflected in commerce and government and in all of the professions and callings. as well as in the classroom and in the home. Students of the University should act to discourage and eliminate cheating of every kind and character for the moral and mental well-being of themselves and their fellow men. Likewise, the teaching faculty should remove and eliminate every situation which provides avenues and opportunities for cheating, thereby contributing to the inculcation of the principles of honesty, integrity, self-reliance and self-respect of the students. It is expected that University officials will have little occasion to place in operation the established procedures for handling cheating cases. Through these procedures and by means of a continued awareness, on the part of both the faculty and the students, of the intellectually and morally weakening effects of cheating, a healthy strengthening of the moral fiber of the University community may be envisioned and accomplished.

Cheating may be defined as including:

1. Obtaining help from another student during examination.
2. Knowingly giving help to another student during examination.
3. The use of notes, books, or any other unauthorized sources of information during examination.
4. Obtaining, without authorization, an examination or any parts thereof prior to taking of the examination.
5. Submitting a report, notebook, speech, outline, theme, or other problem for credit that has been knowingly obtained or copied in whole or in part from another individual's academic composition, compilation or other product.
6. Submitting or participating in the submission of a report or examination paper falsely represented as being the result of the original efforts of the submitting student.
7. Altering the record of any grade in any gradebook, office, or other record.
8. Any other type of misconduct, offense, or manifestation of dishonesty or unfairness in or relating to the academic work.

The deans of the several colleges and schools shall have the authority and shall be responsible for the handling of cheating cases arising or occuring within their respective colleges and schools.

Each member of the teaching faculty and all other University employees, including but not limited to assistants, proctors, office personnel, janitors and night watchmen, shall promptly report, via the department chairman or immediate superior, if any, each known case of cheating, as hereinbefore defined, to the dean of the college or school concerned.

Each case of cheating shall be handled with dispatch, and the dean shall promptly report thereon in writing to the President and shall at the same time place a copy of such report in the permanent record of the student concerned and forward another copy thereof to the Director of Student Affairs for his permanent records. In all cheating cases involving women students, an additional copy of such report shall be forwarded to the Dean of Women. The report shall include a brief statement covering the facts and circumstances of the case and the discipline applied or recommended.

In cases wherein cheating occurs in a college or school other than that in which the student is registered, the minimum penalty, as prescribed in the paragraph below, shall be applied by the dean of the college or school in which the cheating occurred. In handling such cases the dean shall follow the procedure in the above paragraph and then immediately refer the case, by transmittal of a copy of the report thereon as prescribed in the above paragraph, to the dean of the college or school in which the student involved is registered. The purpose of this copy of the report is for information and for imposition or recommendation of such further discipline or penalty as may be warranted. Upon completion of his review of and action on the case, the dean of the college or school in which the student is registered shall thereupon compose his independent written report on the case and transmit same to the President and otherwise distribute copies thereof as provided in the above paragraph.

The deans and their respective teaching faculties shall take remedial and preventive steps to remove every opportunity for any situation conducive to cheating. Particular attention shall be given to the maintenance of a high level of proctoring in those colleges, schools and departments wherein proctoring is employed and to security against student access to or knowledge of examination and test materials

prior to the time of the intended use thereof for student examination and testing purposes. The deans shall exercise their independent discretion as to methods and means of accomplishing these ends and may employ thereof faculty meetings, written instructions, or other effective devices and measures.

The *minimum* penalty for all cases of cheating shall be dismissal from the course and the establishment of a grade of "Failure" in the course, as of the date of cheating, *unless in the opinion of the dean there are extenuating circumstances which might indicate the advisability of a lesser penalty.*

For a second or subsequent cheating offense, in addition to failure in the course, suspension or expulsion of the student shall be recommended by the dean for the President's action. The office of the Director of Student Affairs shall maintain its records of reports in cheating cases so as to detect and ascertain promptly and accurately the occurrence of second or subsequent cheating offenses and, upon inquiry by the dean, shall promptly advise whether the student has been guilty of any prior cheating offense or offenses.

Suspension or expulsion of a student guilty of cheating may, in first offense cases, be recommended by the dean to the President if the facts and circumstances of the case so warrant or the rules, regulations or policy of the college or school concerned so require.

In cheating cases involving criminal offenses, such as theft of examination or test materials, alteration of records, breaking or entering buildings, offices, desks, safes, or filing cabinets, damage to public property and other like or similar misconduct, the academic penalties and discipline as herein prescribed shall be applied and in addition thereto the dean of the college or school concerned shall with the approval of the President, cause the facts of each case to be presented to the Prosecuting Attorney of Monongalia County, West Virginia, for his further investigation and for prosecution by injunction or otherwise as may be warranted. Upon the issuance of a warrant for or the return of an indictment against a student on account of any such offense, the President shall suspend such student from the University pending final prosecution thereon. If the student be acquitted of the offense, his suspension may be vacated, but if convicted of the offense, he shall be expelled from the University.

A student may appeal from the decision of action of a dean in a cheating case to the President for review and reconsideration and the President may thereupon affirm or reverse, in whole, or in part, the decision or action of the dean.

In his action on any cheating case, whether on appeal by a student or on recommendation or reference by a dean, the President may consider the case record before him, may further investigate or cause to be investigated the facts and circumstances of the case, and may act personally thereon and dispose thereof, or he may, in his discretion, refer the case to another appropriate University office, committee or agency for review, investigation, consideration and recommendation prior to his final action thereon and disposition thereof.

It is recommended that, in all phases of cheating cases, care and caution be observed so as to avoid accusation or charge of cheating or related impropriety which may be without foundation. A false accusation may have serious implications and result in reflection on or harm to an innocent and unoffending student and discredit to the faculty.

Curricula and Courses

Part III

ABBREVIATIONS

The following abbreviations are used in the descriptions of courses:

I—a course given in the first semester.
II—a course given in the second semester.
I, II—a course given in each semester.
I and II—a course given throughout the year.
S—a course given in the Summer Session.
hr.—number of credit hours per course.
consent—consent of instructor required.
PR:—prerequisite.

PLAN FOR NUMBERING COURSES

For convenience each course of study is designated by the name of the department in which it is given and by the number of that course. The plan for numbering is as follows:

Courses 1 to 99—courses intended primarily for freshmen and sophomores.
Courses 100 to 199—courses intended primarily for juniors and seniors.
Courses 200 to 299—advanced courses for juniors, seniors, and graduates.

SEMESTER COURSE SCHEDULES

Before the opening of each semester, a schedule is printed announcing the courses that will be offered in the College of Agriculture and Forestry; the Division of Air Force Aerospace Studies; the College of Arts and Sciences; the College of Commerce; the Creative Arts Center; the School of Dentistry; the College of Engineering; the College of Human Resources and Education; the School of Journalism; the College of Law; the School of Medicine; the Division of Military Science; the School of Mines; the School of Nursing; the School of Pharmacy; the School of Physical Education; and the Evening Education course offerings.

The College of Agriculture and Forestry

ADMINISTRATION

Robert S. Dunbar, Jr., Ph.D., *Dean of the College of Agriculture and Forestry and Professor of Animal Science* (1964), 1952.

O. J. Burger, Ph.D., *Assistant Dean of the College of Agriculture and Forestry and Director of Resident Instruction (Division of Agriculture); Professor of Agronomy* (1959), 1950.

Homer C. Evans, Ph.D., *Associate Director of the Agricultural Experiment Station and Professor of Agricultural Economics* (1967), 1949.

A. H. VanLandingham, Ph.D., *Associate Dean of the College of Agriculture and Forestry and Director of the Agricultural Experiment Station* (1959), 1929.

David E. White, Ph.D., *Director of the Division of Forestry and Assistant Professor of Forest Economics* (1966), 1964.

Faculty Committees

Courses and Hours: R. S. Dunbar, Jr., (ex officio), *Chairman;* K. L. Carvell, J. R. Hamilton, G. A. McLaren, and E. G. Scott.

Scholarship: D. L. Kulow, *Chairman;* J. L. McBee, Jr., and F. C. Cech.

Library: R. L. Jack, *Chairman;* W. G. Martin, and R. L. Smith.

Student Aid and Grants: O. E. Schubert, *Chairman;* H. E. Kidder, A. W. Goodspeed, and N. D. Jackson.

Executive: R. S. Dunbar, Jr., (ex officio), *Chairman;* John Luchok (ex officio), M. G. Brooks, E. H. Tryon, G. A. McLaren, and Valentin Ulrich.

Visiting Professorships: R. L. Reid, *Chairman;* R. E. Nelson and A. E. Watada.

Extended Functions: J. H. Clarke, *Chairman;* H. P. Berthy, D. J. Horvath, N. C. Hardin, Jr., B. W. Wamsley, Jr., and W. H. Childs.

Research: K. D. McIntosh, *Chairman;* E. K. Inskeep, R. F. Keefer, S. M. Brock, L. M. Ingle, and A. L. Barr.

The College Visiting Committee

Don E. Hollen, *Chairman*, Fairmont
Sherman Beard, Hillsboro
Mrs. Ruth L. Bell, Mill Creek
William P. Dieckmann, Elm Grove
Edward Grose, Terra Alta
James H. Harless, Gilbert
C. C. Lewis, Jr., Point Pleasant
Ross Tuckwiller, Lewisburg
Mrs. Helen T. Waters, Fairmont

ORGANIZATION

For purposes of administration, the College of Agriculture and Forestry is organized into three divisions:

1. Resident instruction in agriculture.
2. Resident instruction in forestry.
3. The Agricultural Experiment Station.

The Dean of the College, the Director of Resident Instruction for Agriculture, and the Director of the Agricultural Experiment Station are located in the Agricultural Sciences Building and the Director of the Division of Forestry is located in the Forestry Building.

OBJECTIVES

To provide an academic setting of excellence in which a young man or woman may attain his or her higher education goals.

To provide a selection of courses through various options for organizing different programs of study leading to proficiency in many professional fields directly in and related to agriculture and forestry.

To provide advanced training courses leading to degrees at master's and doctoral levels.

To carry out a research program in fields and problem areas of pertinence to West Virginia.

HISTORY AND FACILITIES

In 1895 the College of Agriculture was established as a distinct college in the University. The Agricultural Experiment Station was founded in 1888 and became part of the College at the time the latter was instituted. The Cooperative Extension Service was added in 1913, and in 1914 the Department of Home Economics was transferred from the College of Arts and Sciences. Organization of the College was completed in 1937 when a full four-year course in forestry was added. The name of the unit then was changed to "The College of Agriculture, Forestry, and Home Economics." On July 1, 1965, the Division of Home Economics was transferred to the College of Human Resources and Education.

The Agricultural Experiment Station was established by the Board of Regents by authority of an Act of Congress known as the Hatch Act. Further support was given by Acts of Congress known as the Adams Act, the Purnell Act, the Bankhead-Jones Act, the Research and Marketing Act of 1946, and the Hatch Act as amended in 1955.

The College now has 900 acres of land for farming lying a short distance from the University campus. This land is divided into five farms. Each of the farms is equipped with modern farm buildings and with special buildings for classroom, experimental, and laboratory work. A 40-acre woodlot is used for instruction and experimentation in forestry.

The Division of Forestry has 498 acres of forest land in Randolph County which is being used for research and educational training. In addition to this work, the tract is used by extension foresters to demonstrate sustained yield and forest operation for the production of hardwood timber.

During 1951 an agreement was completed between the University and the Island Creek Coal Company making the 3,000-acre Island Creek Experimental Forest available for research in applied forestry. The experimental work is open to inspection by forestry students.

Cooper's Rock State Forest, an area of 13,000 acres fronting on Cheat Lake, is less than ten miles from the University. By agreement between the University and the Conservation Commission of West Virginia, an 8,000-acre part of this forest has been set aside as the West Virginia University Forest, Division of the Cooper's Rock State Forest. This area is managed by the Division of Forestry for research and educational purposes.

During 1966, an agreement was completed between West Virginia University and Georgia-Pacific Corporation. This agreement made a 3,000-acre tract in Mingo County available for research in applied forestry. Forest management, silvicultural, and wildlife studies are in progress on this tract.

Branch experiment stations are maintained at Wardensville, Point Pleasant, Kearneysville, and Reedsville. The Reymann Memorial Experimental Farms at Wardensville was established in 1917. It occupies 987.5 acres of farm land on the Cacapon River in Hardy County. The farm is being operated on an experimental basis involving pasture improvement, erosion control, soil rebuilding, water conservation, irrigation, crops, beef cattle, sheep, and poultry.

The Ohio Valley Experiment Farm of 150 acres at Point Pleasant on the Ohio River was acquired in 1948. It is operated as a unit for the experimental work in tobacco and truck and field crops of special interest to the farmers of the Ohio and Kanawha valleys.

The University Experiment Farm, a tract of 158 acres near Kearneysville in the eastern section, was established in 1930 as a branch experiment station for the study of problems relating to fruit production, including insect and disease control, as well as problems of general farming typical of the section.

The Reedsville Experiment Farm in Preston County was acquired in 1944. Work on this 475-acre farm consists of research programs with potatoes, ornamentals, small fruits, corn and legumes in rotations, livestock, and agricultural engineering.

Bulletins, circulars, and pamphlets—setting forth the results of experiments, investigations, and recommendations—are published for free distribution and may be obtained from the Cooperative Extension Agent in each county.

With its farm land, buildings, and equipment the College of Agriculture and Forestry offers thorough and complete training in most branches of agriculture and forestry.

College Regulations

Students in the College of Agriculture and Forestry must comply with University regulations dealing with scholarship. Specific regulations that apply to the College are described in the following sections.

ABSENCES

Students shall attend all classes, including laboratory sessions, for which they are registered, unless prevented from doing so by illness, injury, authorized University activities, or other reasons approved by their dean. The student who is absent for any of the foregoing reasons is nevertheless responsible for the work missed.

Notice of excessive absences, reported to the director of the division, shall become a part of the student's official record which is maintained in the office of the director of the division.

Excused absences will be granted by the division director for approved off-campus trips required in connection with a course taken for credit.

Excused absences may be granted to students with at least a 2.0 grade-point average for activities such as fraternal meetings, club meetings and judging contests. The decision in each instance shall be based on the merits of the case. Requests for excused absences shall be denied when the cumulative grade-point average is less than 2.0.

Grade-point averages for a first-semester freshman and transfer student may be determined from the mid-semester grade report, if available. If not available, the freshman or transfer student shall present statements from instructors showing that his work is satisfactory to date.

CREDIT DEFINED

The "credit hour" is the standard for computing the amount of work required for graduation. The "hour" represents the amount of work done in one semester (about seventeen weeks) in one recitation or lecture with two preparation hours per week or three hours practice or laboratory work requiring no outside preparation.

CREDIT LOAD PER SEMESTER

The minimum work per semester is 14 credit hours and the maximum work per semester is 20 hours. Exceptions to this regulation are:

A student in his first semester of enrollment may reduce his course load to 12 semester hours with the approval of his adviser.

An adviser may register a student as a part-time student if less than 14 hours are required to meet all requirements for the Bachelor's Degree.

Any additional exceptions to these regulations may be obtained by petitioning the Scholarship Committee of the College.

CLASSIFICATION OF STUDENTS AND GRADUATION

The table on page 55 shows the number of semester hours required for classification as second-year, third-year, and fourth-year students, and for graduation, according to the curricula in the College of Agriculture and Forestry.

TRANSFERRING CREDITS

Students intending to transfer credits from another institution to the College of Agriculture and Forestry should indicate their desire to do so sufficiently in advance

of registration time so that the Office of Admissions can evaluate the courses proposed for transfer. If it happens that a student does not have this information at registration time, deferral on acceptance of the course for credit will be made until the needed information is obtained.

TRANSFER STUDENTS

Students without grade-point deficiencies and already enrolled in the University may transfer into the College with the approval of the respective Director of the Division.

Prospective students with grade-point deficiencies from another college or university may not enter the College of Agriculture and Forestry without permission from the Dean upon recommendation by the Scholarship Committee and the Director of the Division in which the student wishes to enroll. Requests from students from college and universities other than West Virginia University should be addressed to the Office of Admissions.

STUDENT PETITIONS

1. Petitions may be submitted to the Scholarship Committee: (a) to register for more than maximum hours regularly allowed; (b) to register for less than minimum load; (c) to drop courses after the regular withdrawal date; (d) for reentry after scholastic suspension, and (e) to transfer into the College with a grade-point deficiency accumulated in another college.
2. Petitions should be prepared on special forms and must include the recommendation of the student's adviser.
3. Barring unusual and unforeseen circumstances, a student is under obligation to complete the courses in which registration was made. Failure in a course at mid-semester does not constitute a reason for withdrawal.
4. Students may appear in person before the Scholarship Committee in support of their petition.
5. Students may appeal decisions of their adviser, Scholarship Committee, and Division Director to the Dean.
6. Students should submit petitions at an early date. Delay may result in denial because sufficient evidence may not be available.

Notice of the recommendation by the Scholarship Committee regarding a petition, after approval by the Dean, shall be sent to the student, to his adviser, and the Director of the Division in order that the report can be filed with the student's scholastic records.

THE "D" REPEAT RULE

The "D" Repeat Rule has been discontinued in the College of Agriculture and Forestry. However, students who received a grade of "D" prior to June, 1965, while enrolled at West Virginia University as first-year students may register for such a course. In such cases the second grade shall supersede the first providing it is not lower than "D".

For teacher certification the student is responsible for every registration in a course for which a grade of A, B, C, D, F, WF, or I is received.

The University grade-point average is computed on all work attempted in all years.

GRADE-POINT DEFICIENCIES

Academic Warning

A student with a grade-point deficiency which is not so large as to cause suspension shall be placed on academic warning. Each student shall be advised in writing of his academic status by the Dean and referred to the appropriate Division Director for additional counsel and guidance. Copies of the letter shall be sent to the parent or guardian, the adviser, the Director, and the official file of the student.

A student with a grade-point deficiency shall not enroll for more than fifteen hours.

Academic Probation

Students who have been reinstated after suspension and students who have transferred from another college with less than a 2.00 grade-point average shall be placed on academic probation until their grade-point deficiency is reduced to a level less than the minimum allowable without suspension. At such time the student will be reassigned to an adviser by the appropriate Division Director.

While on academic probation a student shall be required to maintain a minimum grade-point average of 2.25 in order not to be suspended.

The Chairman of the Scholarship Committee shall serve as adviser to all students on academic probation.

Academic Suspension

Any student whose grade-point deficiency exceeds the maximum allowed by these regulations shall be subject to suspension. The student shall be notified of suspension in writing by the Dean. Copies of the letter shall be sent to the Registrar, Director of Residence Halls, the appropriate Division Director, the parent or guardian, the adviser, and the official file of the student.

Any student on academic probation whose grade-point average at the end of a period of enrollment is less than 2.25 for that period of enrollment shall be suspended. Letters of notification shall be distributed as described above.

Students who have been suspended are advised to petition the Scholarship Committee after March 1 or October 1 to ascertain under what conditions, if any, they may be reinstated.

See page 59 for a table showing Maximum Allowable Grade-Point Deficiency.

STUDENT ACTIVITIES

Students in the College have many opportunities for participating in College-sponsored events, College student organizations, and College honoraries. Numerous other organizations on the campus are open to University students.

Every student entering judging courses offered in the College has the opportunity to compete for a place on livestock, meat, dairy cattle, dairy products, vegetable, flower, and fruit-judging teams. Qualified teams compete at regional, national, and international contests.

Agriclub is a general club open to all persons who are interested in the betterment of agriculture. It is the combining club for all students in the College regardless of the individual's particular field. Service and interest are its goals.

Alpha Tau Alpha is a national agricultural education professional honorary fraternity that plays a vital role in the preparation of those who plan to teach vocational agriculture. This organization fosters a fraternal spirit among teachers in teacher education for vocational agriculture.

Alpha Zeta is an honorary agricultural fraternity. The West Virginia chapter of Alpha Zeta was instituted in the College of Agriculture in 1921. Agriculture and forestry students who have completed three semesters and rank in the upper two-fifths of their respective classes are eligible for membership.

American Society of Agricultural Engineers is a professional society. Students enrolled in the Agricultural Engineering curriculum may become student members. Students in Agricultural Mechanics may join the branch and take active part in its local activities. Its purpose is to encourage professionalism among the student members and to learn about the activities of the parent society. It provides a medium for student participation in Agricultural Engineering activities and functions of mutual interest among branches in all states.

Blade and Spade Club, the student chapter of the American Society of Agronomy, is an undergraduate organization open to all students interested in the crop and soil sciences. The objectives of the club are: (1) to promote scholarship, (2) to develop leadership, (3) to promote student faculty contact and support, and (4) to act as an assembly for discussion of extracurricular professional topics. The club sponsors a soil judging team and encourages members to participate in essay and speech contests sponsored by the Student Section of the American Society of Agronomy.

Block and Bridle Club is open to students majoring in animal science or those with an interest in that field. The objectives are: (1) promote high scholastic standards; (2) promote animal sciences; and (3) bring about a close relationship among workers interested in animal science. The club sponsors judging contests, outings, and the Little Eastern National Livestock Show.

Collegiate Chapter of Future Farmers of America provides all former FFA members and those preparing to teach vocational agriculture with an opportunity to continue their FFA work and prepare for future service to the organization and to agriculture. It offers opportunities in leadership development and acquaints prospective agricultural leaders with their responsibilities and duties in leading youth and adult groups.

Gamma Sigma Delta, the honor society of agriculture, encourages high scholastic attainment and excellence in all branches of agriculture and forestry. Outstanding individuals of the senior class, graduate students, faculty, and alumni of both divisions of the College are elected to membership by the faculty members.

University 4-H Club is sponsored by the 4-H Club Department of the Cooperative Extension Service. Former and present 4-H'ers are invited to join, as well as other college students interested in upholding 4-H ideals. Regular bi-monthly meetings of an educational nature, service projects, and special fun and fellowship activities give real zest to the program.

The *West Virginia University Student Chapter of the Soil Conservation Society of America* seeks to promote better understanding of, and leadership training for, the intelligent use and conservation of land and water resources, through informal monthly meetings with faculty and other professionals. Membership is open to any full-time student at the University.

W.V.U. Dairy Cattle Judging Team is composed of students demonstrating proficiency in the evaluation of conformation of the dairy cow. The Dairy Cattle Judging Team participates in the Eastern Intercollegiate Dairy Cattle Judging Contest at the Eastern States Exposition at Springfield, Massachusetts, and on occasion the National Dairy Cattle Congress at Waterloo, Iowa.

W.V.U. Dairy Products Judging Team is composed of students that have completed the Dairy Products Evaluation Course and are interested in intensive training for a place on the team. The team participates annually in the Southern and the International Contests.

W.V.U. Dairy Science Club was organized for the purpose of bringing together those students interested in furthering their knowledge and experience in the fields of Dairy Production and Dairy Foods. One or more projects and an outing are carried out annually.

W.V.U. Flower Judging Team is selected from the class in Flower Judging. It competes each spring in the National Intercollegiate Flower Judging Contest sponsored by Pi Alpha Xi (floriculture honor society) and the Society of American Florists.

W.V.U. Fruit Judging Team is composed of the four top students enrolled in the class on Apple Identification and Judging. The team competes in the Eastern Intercollegiate Fruit Judging Contest held on the campus of one of the member schools in early December each year.

W.V.U. Livestock Judging Team is composed of students interested in intensive training in livestock evaluation and selection. Training trips are made to other land-grant colleges in this area, purebred herds, and state sales. The five-man team participates in the Northcentral and Southeastern Intercollegiate judging contests in the spring and the Pennsylvania Farm Show, the Eastern National, and International Intercollegiate contests each fall.

W.V.U. Meat Judging Team is composed of students interested in intensive training in meat judging and grading. Membership on a collegiate meat judging team is a prerequisite for certain jobs with the Livestock Division of the U.S.D.A. The team participates in the Eastern National Intercollegiate Meat Judging Contest at Baltimore, Maryland, and in the International Intercollegiate Meat Judging Contest at Madison, Wisconsin.

W.V.U. Vegetable Judging Team is composed of students in the class on Vegetable Identification and Judging who compile the best record. The team competes in the National Intercollegiate Vegetable Judging Contest held in conjunction with the annual meeting of the National Vegetable Growers' Association in early December.

The Forestry Club (W.V.U. Foresters) forms an important part of each forestry student's program. Primarily designed to provide leadership training, its activities include weekly meetings with distinguished foresters as guests, publication of the "Cruiser" (the Foresters' yearbook), intramural sports, dances, an annual banquet, and an annual field day for competitive woodmen's events with the State University of New York at Syracuse and Pennsylvania State University.

A chapter of *Xi Sigma Pi,* national forestry honorary fraternity, was established in the Division of Forestry in 1952. Upperclassmen whose scholarship places them in the upper quarter of their classes may be elected to membership. Through their activities this honorary seeks to maintain high scholastic standards in forestry education.

The Society of American Foresters is a professional society which accepts as members only those persons actually engaged in technical forestry work or studying in preparation for such work. Its objects are "to represent, advance, and protect the interests and standards of the profession of forestry, to provide a medium for exchange of professional thought, and to promote the science, practice, and standards of forestry in America." The West Virginia Chapter was organized in 1945.

ADVISERS OF STUDENT CLUBS AND ACTIVITIES

Agriclub, H. E. Kidder and O. J. Burger, *Advisers*
Alpha Tau Alpha, R. C. Butler, *Adviser*
Alpha Zeta, G. G. Pohlman, John R. Hamilton, and Paul E. Nesselroad, *Advisers*
American Society of Agricultural Engineers, A. D. Longhouse, *Adviser*
Blade and Spade, Agronomy Club, Paul Henderlong and Carl Engle, *Advisers*
Block and Bridle Club, E. K. Inskeep and E. A. Linger, *Advisers*
Collegiate Chapter of Future Farmers of America, Warren Kelly, *Adviser*
Gamma Sigma Delta, E. H. Tryon, *President*
University 4-H Club, Reita Marks and Glenn Snyder, *Advisers*
W.V.U. Student Chapter, Soil Conservation Society of America, Carl F. Engle and George E. Toben, *Advisers*
W.V.U. Dairy Cattle Judging Team, R. A. Ackerman, *Coach*
W.V.U. Dairy Products Judging Team, S. J. Weese, *Coach*
W.V.U. Dairy Science Club, S. J. Weese, *Adviser*
W.V.U. Flower Judging Team, A. P. Dye, *Coach*
W.V.U. Fruit Judging Team, W. H. Childs, *Coach*
W.V.U. Livestock Judging Team, H. E. Kidder, *Coach*
W.V.U. Meat Judging Team, J. L. McBee, *Coach*
W.V.U. Vegetable Judging Team, *Staff*
The Forestry Club, A. B. Brauner, *Adviser*
Xi Sigma Pi, K. L. Carvell, *Adviser*
The Society of American Foresters, Allen Goodspeed, *Adviser*

The Division of Agriculture

FACULTY—DIVISION OF AGRICULTURE

Agricultural Economics

Kenneth D. McIntosh, Ph.D., *Associate Professor and Chairman of Agricultural Economics and Associate Agricultural Economist* (1967), 1957.

Victor F. Amann, Ph.D., *Assistant Professor of Agricultural Economics* (Assigned to WVU Contract, Kampala, Uganda) (1966).

Alfred L. Barr, Ph.D., *Associate Professor of Agricultural Economics and Associate Agricultural Economist* (1961).

James H. Clarke, M.S., *Professor of Agricultural Economics and Agricultural Economist* (1960), 1939.

Robert I. Coltrane, M.S., *Research Agricultural Economist, Economic Research Service, United States Department of Agriculture* (1962).

Homer C. Evans, Ph.D., *Professor of Agricultural Economics and Agricultural Economist; Associate Director of Agricultural Experiment Station* (1967), 1949.

Anthony Ferrise, M.S., *Instructor and Area Extension Specialist—Resource Development, Keyser Appalachian Center* (1965).

Robert L. Jack, Ph.D., *Assistant Professor of Consumer Economics; Assistant Agricultural Economist* (1965), 1963.

Dallas M. Lea, M.S., *Research Agricultural Economist, Economic Research Service, United States Department of Agriculture* (1966).

Ralph E. Nelson, Ph.D., *Associate Professor of Agricultural Economics and Director of International Programs* (1965), 1964.

Ernest J. Nesius, Ph.D., *Professor of Agricultural Economics; Vice-President—Appalachian Center; Director of Cooperative Extension Service* (1963), 1960.

Paul E. Nesselroad, M.S., *Assistant Professor of Agricultural Economics and Assistant Agricultural Economist* (1963), 1954.

James L. Stallings, Ph.D., *Assistant Professor of Agricultural Economics and Assistant Agricultural Economist* (1965).

Ronald L. Stump, M.S., *Assistant Professor and Assistant Director; State Chairman, Food and Rural Affairs, Cooperative Extension Service* (1967), 1948.

Mary C. Templeton, M.S., *Research Assistant in Agricultural Economics* (1965), 1955.

George E. Toben, M.S., *Professor of Agricultural Economics and Agricultural Economist* (1960), 1946.

F. Wayne Weber, B.S., *Research Agricultural Economist, Economic Research Service, United States Department of Agriculture* (1967).

Agricultural Education

Russell C. Butler, Ph.D., *Professor and Chairman of Agricultural Education and Professor of Education* (1956), 1944.

Paul V. Armbrester, M.S., *Assistant Professor of Agricultural Education and Chief of Party and Vocational Agriculture Adviser at Dar es Salaam, Tanzania* (1966), 1963.

Lenrod L. Blowe, B.S., *Instructor in Vocational Agriculture, Kenya* (1964).

Robert H. Burns, B.S., *Instructor in Vocational Agriculture, Kenya* (1964).

Frederick P. Holmes, M.S., *Instructor in Vocational Agriculture, Bukalasa Agricultural College, Uganda* (1964).

Thomas O. Kajer, M.S., *Instructor in Vocational Agriculture, Kenya* (1965).

William I. Lindley, M.S., *Instructor in Vocational Agriculture, Kenya* (1966).

Warren G. Kelly, M.S., *Assistant Professor of Agricultural Education and Assistant Professor of Education* (1957).

Robert H. Maxwell, M.S., *Assistant Professor of Agricultural Education and Chief of Party, Vocational Agriculture Project, Kenya* (1964).

O. Claude McGhee, M.S., *Assistant Professor of Agricultural Education and Assistant Professor of Education* (1961).

Dickson W. Parsons, Ph.D., *Professor Emeritus of Agricultural Education* (1951), 1923.

Jay M. Reid, B.S., *Instructor in Vocational Agriculture, Kenya* (1964).

Agricultural Engineering

A. D. Longhouse, P.E., Ph.D., *Professor and Chairman of Agricultural Engineering* (1945), 1938.
Waldo E. Bell, B.S.Ag.E., *Assistant Professor of Agricultural Engineering* (1966); *State Extension Agricultural Engineering Specialist* (1945).
Edmond B. Collins, M.S.Ag.E., *Assistant Professor of Agricultural Engineering* (1965), 1960. (Assigned to Egerton College, Njoro, Kenya, East Africa).
Chester A. Cromer, M.S.Ag.E., *Assistant Professor of Agricultural Engineering* (1964). (Assigned to Tanzania Agricultural College, Morogoro, Tanzania, East Africa).
Walter H. Dickerson, P.E., M.S.Ag.E., *Professor of Agricultural Engineering* (1957), 1953.
William B. Easley, M.S., *Instructor in Agricultural Mechanics* (1966). (Assigned to Arapai Agricultural College, Uganda, East Africa).
Kendall C. Elliott, M.S.Ag.E., *Assistant Professor of Agricultural Engineering* (1962), 1954.
Roy E. Emerson, M.S., *Associate Professor of Agricultural Engineering* (1957), 1940.
Gordon E. Ferguson, M.S., *Instructor in Agricultural Mechanics* (1967). (Assigned to Arapai Agricultural College, Uganda, East Africa).
Mylo A. Hellickson, M.S.Ag.E., *Research Assistant in Agricultural Engineering* (1966).
Dennis E. Kluver, B.S., *Instructor in Agricultural Mechanics* (1967). (Assigned to Bukalasa Agricultural College, Uganda, East Africa).
Homer W. Parker, P.E., B.S., *Instructor in Agricultural Engineering* (1964). (Project Leader, stationed with Department of Agricultural Engineering in cooperation with U. S. Forest Service Engineering Research Laboratory).
Randall C. Reeder, B.S.Ag.E., *Instructor in Agricultural Engineering* (1966).
Arthur W. Selders, M.S.Ag.E., *Assistant Professor of Agricultural Engineering* (1966); *State Extension Agricultural Engineering Specialist* (1963).
Richard A. Spray, B.S.Ag.E., *Research Assistant in Agricultural Engineering* (1966).
Gerald E. Thierstein, M.S.Ag.E., *Assistant Professor of Agricultural Engineering* (1962). (Assigned to Egerton College, Kenya, East Africa).
John L. Wagner, M.S.Ag.E., *Assistant Professor of Agricultural Engineering* (1965). (Assigned to Egerton College, Kenya, East Agrica).
Robert O. Weedfall, B.S., *Instructor in Agricultural Engineering* (1963). (Climatologist, stationed with Department of Agricultural Engineering in cooperation with U. S. Weather Bureau).

Agronomy and Genetics

G. Gordon Pohlman, Ph.D., *Professor of Agronomy and Chairman of Agronomy and Genetics; Agronomist* (1938), 1930.
Freddie L. Alt, B.S.Agr., *Instructor in Agronomy and Farm Superintendent* (1964).
Newton M. Baughman, Ph.D., *Professor of Agronomy and Agronomist; Senior Agricultural Educator*, Makere University, Kampala, Uganda (1965), 1949.
Orus L. Bennett, M.S., *Research Soil Scientist, USDA Cooperator, Agronomy and Genetics* (1965).
O. J. Burger, Ph.D., *Assistant Dean of College of Agriculture and Forestry; Director of Resident Instruction—Agriculture; Professor of Agronomy* (1959), 1950.
Maria H. Cartledge, A.B., *Research Assistant in Agronomy* (1961), 1952.
Edwin Colburn, M.S., *Research Assistant* (1967).
Donald P. Doolittle, Ph.D., *Associate Professor of Genetics and Associate Geneticist* (1967), 1966.
Carl F. Engle, Ph.D., *Assistant Professor of Agronomy and Assistant Agronomist* (1964).
Paul R. Henderlong, Ph.D., *Assistant Professor of Agronomy and Assistant Agronomist* (1964).
Everett M. Jencks, Ph.D., *Assistant Professor of Agronomy and Assistant Agronomist* (1957).
Gerald A. Jung, Ph.D., *Professor of Agronomy and Agronomist* (1967), 1958.
Joginder Nath, M.S., *Associate Professor of Genetics* (1967), 1966.

Clifford D. Porter, Ph.D., *Assistant Professor of Agronomy and State Extension Specialist—Agronomy* (1966).
Igor V. Sarkissian, Ph.D., *Associate Professor of Genetics and Associate Geneticist* (1962).
Arnold G. Scholten, Ph.D., *Assistant Professor of Agronomy* (1965).
George Sharpe, M.S., *Associate Professor of Agronomy and State Extension Specialist—Soil Conservation* (1944), 1929.
Soh Chao Shih, Ph.D., *Research Associate* (1961).
Rabindar N. Singh, Ph.D., *Research Associate* (1965).
Charles B. Sperow, M.S., *Associate Professor of Agronomy* (1967), 1952. (Assigned to Bukalasa Agricultural College, Bombo, Uganda, East Africa).
Siegbert A. Thies, M.S., *Assistant Professor of Agronomy* (1964). (Assigned to Tanzania Agricultural College, Morogoro, Tanzania, East Africa).
Valentin Ulrich, Ph.D., *Associate Professor of Genetics and Associate Geneticist* (1962), 1957.
Willem A. van Eck, Ph.D., *Associate Professor of Soil Science* (1966), 1957. (Assigned to Makere University, Kampala, Uganda, East Africa).
Collins Veatch, Ph.D., *Professor of Agronomy and Agronomist* (1959), 1945.

Animal Industry and Veterinary Science

Marvin R. McClung, Ph.D., *Professor and Chairman of Animal Industry and Veterinary Science and Animal Scientist* (1964), 1942.
Richard A. Ackerman, M.S., *Assistant Professor of Dairy Science and Assistant Dairy Scientist* (1946), 1928.
Gerald C. Anderson, Ph.D., *Professor of Animal Science and Animal Husbandman* (1954), 1950.
Donald F. Butcher, Ph.D., *Assistant Professor of Dairy Science and Assistant Dairy Scientist* (1965).
Arthur A. Camp, Ph.D., *Assistant Professor of Poultry Nutrition and Assistant Poultry Nutritionist* (1965).
Carl E. Carlson, B.S., *Research Associate* (1966).
John A. Chilko, Jr., M.S., *Research Associate* (1966).
C. J. Cunningham, Sr., B.S.Agr., *Animal Husbandman in Charge*, Reymann Memorial Farms, Wardensville (1943).
Leslie Dozsa, D.V.M., *Associate Professor of Veterinary Science and Associate Animal Pathologist* (1961), 1957.
Robert S. Dunbar, Jr., Ph.D., *Professor of Animal Science; Dean of College of Agriculture and Forestry* (1964), 1952.
Wilbur Dye, M.S., *Instructor in Animal Science* (1964), 1950. (Assigned to Tanzania Agricultural College, Morogoro, Tanzania).
Joseph C. Emch, M.S., *Assistant Professor and State Extension Specialist—Animal Science* (1957), 1947.
Jack M. Gay, M.S., *Instructor in Veterinary Science* (1964). (Assigned to Veterinary Training Institute, Entebbe, Uganda).
Robert L. Gay, D.V.M., *Instructor in Veterinary Science* (1964). (Assigned to Arapai Agricultural College, Uganda).
James T. Guill, M.S., *State Extension Specialist—Animal Husbandry* (1966).
Ted R. Hash, B.S., *Assistant Professor and State Extension Specialist—Poultry Science* (1947), 1937.
Rush C. Hatch, B.S., *Dairy Herdsman* (1966).
James O. Heishman, B.V.Sc., V.S., *Associate Animal Pathologist*, Reymann Memorial Farms, Wardensville (1949).
Donald J. Horvath, Ph.D., *Associate Professor of Animal Science and Associate Animal Husbandman* (1960), 1957.
Harold M. Hyre, M.S. *Associate Professor of Poultry Science and Associate Poultry Scientist* (1944), 1931.
Emmett K. Inskeep, Ph.D., *Assistant Professor of Animal Science and Assistant Animal Scientist* (1964).
Robert O. Kelley, Ph.D., *Assistant Professor and State Extension Specialist—Dairy Science* (1966).

Harold E. Kidder, Ph.D., *Professor of Animal Science and Animal Husbandman* (1960), 1954.
Edwin A. Linger, B.S., *Livestock Herdsman* (1965).
James L. McBee, Jr., Ph.D., *Associate Professor of Animal Science and Associate Animal Husbandman* (1964), 1959.
George A. McLaren, Ph.D., *Professor of Animal Science and Nutritionist* (1959), 1955.
William G. Martin, Ph.D., *Assistant Professor of Agricultural Biochemistry and Assistant Agricultural Biochemist* (1963), 1958.
Byron W. Moore, M.S., *Assistant Professor and State Extension Specialist—Poultry Science* (1955), 1947.
Norman O. Olson, D.V.M., *Professor of Veterinary Science and Veterinarian* (1964), 1948.
Homer Patrick, Ph.D., *Professor of Agricultural Biochemistry and Agricultural Biochemist* (1963), 1957.
Ronald A. Peterson, Ph.D., *Assistant Professor of Poultry Science* (1966).
Robert L. Reid, Ph.D., *Associate Professor of Animal Science and Associate Nutritionist* (1964), 1957.
John H. Rietz, D.V.M., *Professor Emeritus of Veterinary Science and Animal Pathology* (1948), 1927.
John R. Schabinger, Ph.D., *Associate Professor and Area Extension Specialist—Dairy Science* (1967), 1964.
LaMont W. Smith, M.S., *Research Associate* (1967).
Paul M. Smith, M.S., *Instructor in Dairy Science* (1959).
Daniel P. Solomon, D.V.M., *Research Associate* (1966).
Robert W. Taber, B.S., *Poultry Superintendent* (1967).
Roy O. Thomas, Ph.D., *Assistant Professor of Dairy Science and Assistant Dairy Scientist* (1964).
A. H. VanLandingham, Ph.D., *Director of Agricultural Experiment Station; Associate Dean of College of Agriculture and Forestry; Professor of Agricultural Biochemistry* (1959), 1929.
Benjamin W. Wamsley, Jr., M.S., *Assistant Professor and State Extension Specialist—Animal Science* (1967), 1948.
Samuel J. Weese, M.A., *Associate Professor of Dairy Science and Associate Dairy Scientist* (1951), 1945.
James A. Welch, Ph.D., *Professor of Animal Science and Animal Husbandman* (1960), 1952.
Frank E. Woodson, D.V.M., *Assistant Professor of Veterinary Science* (1963). (Assigned to Veterinary Training Institute, Entebbe, Uganda).

Horticulture

Eion G. Scott, Ph.D., *Professor and Chairman of Horticulture and Horticulturist* (1962).
William H. Childs, Ph.D., *Professor of Horticulture and Horticulturist* (1953), 1931.
Clifford W. Collier, Jr., M.L.A., *Assistant Professor and State Extension Landscape Architect* (1960).
C. K. Dorsey, Ph.D., *Professor of Entomology and Entomologist* (1952).
Arthur P. Dye, M.S., *Associate Professor of Horticulture and Associate Horticulturist* (1962), 1923.
N. Carl Hardin, Jr., M.S., *Associate Professor and State Extension Specialist—Horticulture* (1964), 1958.
Clinton E. Hickman, M.S., *Assistant Horticulturist* (1964), 1962.
Luther M. Ingle, Ph.D., *Associate Professor of Horticulture and Associate Horticulturist* (1966), 1963.
George W. Longenecker, M.F.A., *Assistant Professor of Landscape Architecture* (1966).
Ray S. Marsh, A.M., *Professor Emeritus of Horticulture and Horticulturist Emeritus* (1965), 1936.
Oliver M. Neal, Jr., Ph.D., *Professor of Horticulture and Horticulturist* (1963), 1942.
Oscar E. Schubert, Ph.D., *Professor of Horticulture and Horticulturist* (1961), 1949.
LeRoy P. Stevens, M.S., *Assistant Horticulturist and Farm Superintendent*, Reedsville Experiment Farm (1964), 1960.

Glenn E. Steyers, M.S., *Associate Professor of Horticulture and University Landscape Architect* (1960).
Alley E. Watada, Ph.D., *Assistant Professor of Horticulture and Assistant Horticulturist* (1965).
Kyle C. Westover, Ph.D., *Professor Emeritus of Horticulture and Horticulture Emeritus* (1963), 1921.

Plant Pathology and Bacteriology

H. L. Barnett, Ph.D., *Chairman of Plant Pathology, Bacteriology, and Entomology; Professor of Mycology and Mycologist* (1960), 1945.
Robert E. Adams, Ph.D., *Associate Professor of Plant Pathology and Associate Plant Pathologist* (1960), 1953.
Joseph G. Barrat, Ph.D., *Associate Professor; State Extension Spray Specialist* (1967), 1958.
C. F. Bishop, Ph.D., *State Extension Specialist—Plant Pathology and Entomology* (1966).
Lowell L. Black, Ph.D., *Assistant Professor of Plant Pathology and Assistant Plant Pathologist* (1964).
Edward S. Elliott, Ph.D., *Professor of Plant Pathology and Plant Pathologist* (1967), 1953.
Mannon E. Gallegly, Jr., Ph.D., *Professor of Plant Pathology and Plant Pathologist* (1960), 1949.
Edwin Gould, B.S., *Entomologist in Charge*, University Experiment Farm, Kearneysville (1946), 1929.
John A. Koburger, Ph.D., *Associate Professor of Bacteriology and Associate Bacteriologist* (1966), 1962.
J. G. Leach, Ph.D., *Professor Emeritus of Plant Pathology and Plant Pathologist Emeritus* (1965), 1938.
Virgil G. Lilly, Ph.D., *Professor of Physiology and Physiologist* (1949), 1927.
David O. Quinn, M.S., *State Program Leader—Safe Use of Pesticides* (1966), 1956.
R. Philip True, Ph.D., *Professor of Plant Pathology and Plant Pathologist* (1955), 1949.
Harold A. Wilson, Ph.D., *Professor of Bacteriology and Bacteriologist* (1957), 1947.

Requirements for the Degrees

The Division of Agriculture offers courses of study to prepare the student for opportunities in science, business, and industry.

Students who enroll in the Division of Agriculture may study in a wide range of major interests, namely:

Agricultural Business.
Agricultural Education.
Agricultural Mechanics.
Animal Science and Industry which includes animal breeding, animal nutrition, animal physiology, animal production (dairy, livestock and poultry), and food science.
Veterinary Science, a pre-veterinary medicine program.
Plant Science and Industry which includes plant breeding, plant nutrition, plant pathology, plant physiology, crop production (forages, grains, fruits, ornamentals, and vegetables).
Soil Science and Soil Conservation.
Agricultural Engineering.
Landscape Architecture.

DEGREE OF BACHELOR OF SCIENCE

This curriculum, with its flexible design, will provide the student with the opportunity to acquire the necessary background in mathematics, chemistry, physics, and modern concepts of biology in preparation for professional or graduate study. Selection of individual courses is the responsibility of the student in consultation

with the adviser. The student must complete a minimum of two courses each in biology, chemistry, and physics and must complete mathematics through calculus. The professional student may substitute chemistry for calculus to meet degree requirements.

	Hr.
English 1 and 2 or conformity with other University English requirements	6
Humanities (Group A)	12
Social Science (Group B)	12
Natural and Physical Science (biology, chemistry, mathematics and physics) (Group C included). Exclusive of courses offered in the College of Agriculture and Forestry	40
Courses in the College of Agriculture and Forestry	24
Military or Air Science and Physical Education	10
Free electives	24
TOTAL	128

DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE

This program of study is designed for students who desire maximum specialization in the broad aspects of the ag-industrial complex; namely, business, industry, education, or farming.

The student may qualify for this degree by completing all courses listed in the Foundation Curriculum, and must complete the programs listed under any of three options; namely, Applied Science, Business, and Education of the Additional Requirements, page 77.

THE FOUNDATION CURRICULUM*

*(Required In All Options)***

	Hr.
Introduction to Agriculture	
Agriculture 11—Professions in Agriculture	1
Agriculture 12—Professions in Agriculture	1
Agricultural Science	
Animal Industry and Veterinary Science 51—Principles of Animal Science	4
Agriculture 52—Principles of Plant Science	4
Agronomy 2—Principles of Soil Science	4
Agricultural Engineering 10—Principles of Agricultural Engineering *or* Agricultural Mechanics Elective	3
Economics	
Economics 51—Principles of Economics	3
Economics 52—Principles of Economics	3
Communication Skills	
English 1—Composition and Rhetoric	3
English 2—Composition and Rhetoric	3
Speech 11—Public Speaking *or* Speech 3, Voice and Diction	3
Physical Science and Mathematics	
Inorganic Chemistry	8
Physics 1—Introductory Physics	4
Mathematics 3—College Algebra	3
Mathematics 4—Trigonometry	3
Biological Science	
Introductory Biological Science	8
TOTAL	58

*Courses of Instruction in the Division of Agriculture may be found beginning on page 81.

**Students must select one of the three options listed on page 77 prior to their third semester of enrollment. Transfer students must make their selection prior to their second registration in the Division of Agriculture.

All courses listed in the Foundation Curriculum are required of all students working for the Bachelor of Science in Agriculture and should be completed with a passing grade before reaching the fourth-year status of 100 hours. Courses within this category not completed before the student attains fourth-year status still must be passed but the hours will not then count toward the total needed for graduation. Exceptional cases will be handled by the Dean.

Suggested Agriculture Curriculum

FRESHMAN YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
*Agr. 11	1	*Agr. 12	1
*English 1	3	*English 2	3
*Intro. Biol. Sci.	4	*Intro. Biol. Sci.	4
*Inorganic Chem. *or* Elective	3-4	*Math. 4	3
*Math. 3	3	*Inorganic Chem.	4
Phys. Ed. 1	1	Phys. Ed. 2	1
Mil. Sci. 1 or A.S. 1	2	Mil. Sci. 2 or A.S. 2	2
	17-18		17

SOPHOMORE YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
*Econ. 51	3	*Econ. 52	3
*Inorganic Chem. *or* Elective	3-4	*Agron. 2	4
*Agr. Eng. 10 *or* Agr. Mech. Elective	3	*Agr. 52	4
*AI & VS 51	4	Elective (Group A, B, or C, University Core)	3-4
*Speech 11 *or* Speech 3	3	Mil. Sci. 4 or A.S. 4	2
Mil. Sci. 3 or A.S. 3	2		16-17
	17-18		

JUNIOR YEAR

First Sem.	*Hr.*
*Physics 1	4

*Courses marked with an asterisk are required for all students in Agriculture, and they should be completed satisfactorily before reaching fourth-year status of 100 hours. Courses within this category not completed before the student attains fourth-year status still must be satisfactorily completed but the hours will not then count towards the total needed for graduation. Exceptional cases will be handled by the Dean. Physics 2 may be required in the Education option.

NOTE: It may be necessary for some students to take English 0 and Math. 2. Such changes in the curriculum schedule may be made with only slight reorganization.

In addition to the curriculum schedule, the student in the junior and senior years must take additional courses in various subject-matter areas to qualify for the Bachelor's Degree in one of three options in Agriculture (see page 77).

Additional Requirements to the Foundation Curriculum

(Hours Required By Options in Agriculture)

Subject Matter Area	Applied Science Option	Business Option	Education Option	Courses For Selection*
Arts and Humanities (Group A)	12	12	12	University Core Requirements
Behavioral and Social Sciences (Group B)	6**	6**	6**	University Core Requirements
Biological Sciences	8	0	4	Botany, Zoology, Pathology, Biochemistry, Bacteriology, Genetics, Entomology, Physiology, Biology
Physical Science and Mathematics	4	0	0	Mathematics, Chemistry, Physics Geology, Surveying
Accounting	0	4	0	Agr. Econ. 110
Business and Economics	0	12	0	A minimum of 9 hr. in College of Commerce. The remaining 3 hr. from either Commerce or Agr. Econ.
Agriculture	30	30	30	Courses in College of Agr. and For., Business majors must have a minimum of 9 hr. of Agr. Econ.
Education and Agricultural Education	0	0	21	Minimum hours required for Teacher Certification in Vocational Agriculture.
Physical Education, Military Science or A.F. Aerospace Studies, or Free Electives	10	10	10	
Free Electives	16	12	3	
TOTAL	86	86	86	

*Credits submitted to meet the requirements in one subject-matter area cannot be used to satisfy requirements in another subject-matter area.

**Economics 51 and 52 in the Foundation Curriculum will contribute 6 hours to all options making a required total of 12 hours.

DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURAL ENGINEERING

(E.C.P.D. ACCREDITED)

Agricultural Engineering is the application of engineering principles to agriculture. Success in the application of these engineering fundamentals to the agricultural industry requires knowledge of both biological and physical sciences. The purpose of the course is to give the student who completes it general training in agriculture and in engineering fundamentals. Considerable stress is given to the basic requirements of animal and plant life on the farm which affect engineering practices, but greater emphasis is made on a thorough knowledge of those underlying principles and methods which are the foundation of all engineering professions.

Although the curriculum gives no opportunity for specialization, Agricultural Engineering is made up of four major fields. These are Farm Power and Machinery, Farm Structures, Soil and Water Conservation, and Electric Power and Processing.

Students preparing to take Agricultural Engineering should present for entrance as many units as possible in mathematics, chemistry, and physics.

Some of the organizations and industries employing agricultural engineers are electric power companies and co-operatives; farm machinery manufacturers and distributors; manufacturers and distributors of building materials; oil companies; electric equipment and other suppliers for farm utilities; trust companies; farm management agencies; federal agencies such as Soil Conservation Service, U. S. Department of Agriculture, Federal Land Bank, and Indian Service; colleges and universities; Army and Navy, and foreign governments.

Opportunities for employment are numerous. At no time since the establishment of the profession has it been crowded, and the outlook is good for a continuance of this situation. With agriculture becoming increasingly mechanized, the demand for agricultural engineers is increasing and should continue to increase. New opportunities arise as mechanization continues. Starting salaries are in line with salaries in other branches of engineering.

Curriculum in Agricultural Engineering

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1—Comp. & Rhet.	3	English 2—Comp. & Rhet.	3
Chem. 15—Inorganic	4	Chem. 16—Inorganic	4
Math. 15—Calculus	4	Math. 16—Calculus	4
M.E. 20—Eng. Draw. & Graph.	3	Physics 11—General	4
Mil. Sci. or A.S. 1	2	Mil. Sci. or A.S. 2	2
P.E. 1—General Program	1	P.E. 2—General Program	1
	17		18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Biological Sci. Elective	4	Agron. 2—Soils	4
Physics 102—General	4	Physics 124—Intro. to Mod. Phy.	4
Math. 17—Calculus	4	Math. 140—Differential Eq.	3
T.A.M. 101—Statics	3	T.A.M. 102—Mech. of Mat.	3
Mil. Sci. or A.S. 3	2	Mil. Sci. or A.S. 4	2
		M.E. 121—Thermodynamics	3
	17		19

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Ag. Eng. 230—Farm Power	3	Ag. Eng. 201—Agr. Structures	3
M.E. 109—Mechanisms	2	C.E. 115—Fluid Mech.	3
Econ. 51—Principles	3	M.E. 126—Engr. Draw. & Graph.	2
E.E. 105—Elec. Fundamentals	4	Econ. 52—Principles	3
T.A.M. 103—Mech. of Mat. II	3	C.E. 1—Surveying	2
T.A.M. 104—Dynamics	3	Eng. Science Elective	3
		Group A Elective	3
	18		19

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
AI&VS 51—Prin. of An. Sci.		Ag. Eng. 290—Prin. of Mach. Des.	3
or			
Agr. 52—Prin. of Plant Sci.	4	Ag. Eng. 210—Application of Elec. to Agr.	
Ag. Eng. 240—Hydrology		*or*	
or			
Ag. Eng. 250—Soil & Water	3	Ag. Eng. 220—Processing	3
M.E. 201—Des. of Mach. Memb.	3	English 126—Adv. Comp.	
Group A Elective	3	*or*	
Agr. Econ. Elective	3	Speech 11—Public Speaking	3
Elective	3	Group B Elective	6
		Elective	3
	19		18

DEGREE OF BACHELOR OF SCIENCE IN LANDSCAPE ARCHITECTURE

This program prepares students for the career of a professional landscape architect. Training is provided in the technical skills of drawing, drafting, and creation of topographical grading plans, construction details, planting plans, and estimates. Basic design courses in art, architecture, and landscape architecture develop skills necessary in the planning of outdoor areas for the fitting of a man's environment to his appropriate use.

Professional landscape architects are qualified for positions in public and private employment, including civil service programs, in the many phases of site planning and design, and for collaboration with other planning professions in the development of land areas. Wherever people require development for living, working, and recreation, the services of the professional landscape architect are essential.

Landscape Architecture Curriculum

FIRST YEAR

				Credit Hours *First Sem.*	*Second Sem.*
English	1	2	Composition and Rhetoric	3	3
L.A.	20	21	Architectural Design	4	4
Art	11	12	Drawing	3	3
L.A.		12	History of Landscape Architecture	0	3
Math.		3	Algebra	0	3
Phys. Ed.	1	2		1	1
M.S. or A.S.	1	2		2	2
Biological Science Elective				4	0
				17	19

SECOND YEAR

Hort-L.A.	160	161	Woody Plant Materials	3	3
Math.	4		Trigonometry	3	0
L.A.	50		Theory of L. Arch. Design	3	0
L.A.		51	L. Arch. Design	0	3
Botany		266	Flora of W. Va.	0	3
C.E.	5		Surveying	4	0
Hort.		162	Herbaceous Plant Mat.	0	3
Elective				4	4
M.S. or A.S.	3	4		2	2
				19	18

THIRD YEAR

L.A.	131	132	Landscape Arch. Construction	3	3
L.A.	150	151	L. Arch. Design	4	4
L.A.	241	242	Planting Design	3	3
L.A.		248	Design Analysis	0	3
Elective				8	6
				18	19

SUMMER

Professional Experience L.A. 62

FOURTH YEAR

L.A.	265		Intro. to Urban Planning	3	0
L.A.	250	251	Advanced L. Arch. Design	5	5
L.A.	276		Recreation Planning	3	0
L.A.		278	Site Planning Projects	0	4
L.A.		284	Prof. Practice	0	2
Elective				3	6
				17	17

Total ..... 144 Hr.

CURRICULUM IN PRE-VETERINARY MEDICINE

West Virginia University has an arrangement with Oklahoma State University through the Southern Regional Education Board and with Ohio State University whereby each institution will accept up to four students annually into their Colleges of Veterinary Medicine. In order to qualify for these positions the students must be West Virginia residents.

Applicants for admission to these Colleges of Veterinary Medicine must present not less than 60 semester hours of acceptable credit. Hours earned in military science or aerospace studies or physical education or survey courses are not counted. Since only eight eligible applicants are accepted each year, alternate goals in standard B.S. degree programs are urged for all pre-professional students. The equivalent for the following professional courses is required of all applicants for admission without condition to the Ohio or Oklahoma Colleges of Veterinary Medicine.

	Semester Hours
Agricultural Survey	2
English and Speech	9
Chemistry	12
Chemistry (Organic)	4
Zoology and Botany	12
Mathematics	3
Physics	8
Humanities and Social Science*	12
Animal Industry and Veterinary Science**	10
TOTAL	72

Applicants with a grade-point average of 2.5 or above will be given first consideration for admission to these institutions.

Courses of Instruction

ASSIGNED TOPICS

In order to be eligible to register in Assigned Topics 180, the student must (1) be in good standing; (2) present, in advance and prior to registration, a written outline of work to be done as an assigned topic. The outline must be acceptable and approved by: (a) the faculty member under whose guidance the assigned topic will be accomplished, (b) the immediate supervision of the faculty member who is to provide the guidance and, (c) by the Director of Resident Instruction, Division of Agriculture.

AGRICULTURE

11. **Professions in Agriculture.** I. 1 hr. Survey of the subject-matter disciplines and of the career opportunities available to students in the Division of Agriculture.

12. **Professions in Agriculture.** II. 1 hr. Continuation of Agr. 11.

52. **Principles of Plant Science.** II. 4 hr. Basics of the nature, history, classification, role, distinction, structure and function, reproduction, improvement, culture, pests, storage and handling, production and marketing, and utilization of agricultural plants.

180. **Assigned Topics.** I, II, S. (See above.)

200. **Agricultural Travel Course.** S. 6 hr. Tour and study of production methods in major livestock and crop regions of the United States and other countries. Influence of population, climate, soil, topography, markets, labor, and other factors on agricultural production.

Agricultural Biochemistry

202. **Introductory Biochemistry.** II. 3 hr. PR: Inorganic and Organic Chem. An introductory course of the biochemistry of carbohydrates, proteins, lipids, vitamins, enzymes, minerals, and hormones of plants and animals.

203. **Introductory Biochemistry Lab.** II. 1 hr. Biochemistry experiments to demonstrate certain phases of the subject matter covered in Agr. Biochem. 202. Also, the use of modern instruments for biochemistry will be taught.

214. **Radionuclide Biochemistry.** II. 3 hr. PR: Inorganic Chem., Organic Chem. or consent. Radionuclide chemistry, methods and isotope handling as needed by students interested in life sciences.

290. **General Biochemistry.** I. 3 hr. PR: Chem. 134, qualitative analysis, and consent. A general course in biochemistry primarily intended to meet the needs of graduate students.

291. **General Biochemistry.** II. 3 hr. PR: Agr. Biochem. 290 or consent. A continuation of Agr. Biochem. 290.

293. **Laboratory Experiments in Biochemistry.** I. 2 hr. PR or conc: Agr. Biochem. 290. Experiments to demonstrate certain phases of the subject matter covered in General Biochemistry.

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*Students applying to Oklahoma State must include a three-credit course in American National Government and a three-credit course in American History.

**Animal Nutrition and Animal Genetics may be taken at Oklahoma State during the second year of Veterinary Medicine.

AGRICULTURAL ECONOMICS

104. **Farm Management.** I. 3 hr. PR: Econ. 52 or equiv. Types and systems of farming; considerations in starting farming; use of records in solving farm problems; land tenure and leases; production for family use.

110. **Agribusiness Accounting.** I. 4 hr. Accounting for business managers who do not intend to become accountants. A brief coverage of terminology and methodology; decisions in accounting as directed by executives; interpretations and values from accounts and accounting statements. Visits to business firms required. Offered in Fall of even years.

131. **Marketing Agricultural Products.** II. 3 hr. PR: Econ. 52 or equiv. Market organization, market policies and practices and factors affecting the marketing of agricultural products. Tour of market agencies and facilities in Pittsburgh area required.

180. **Assigned Topics.** I, II, S. (See page 81.)

200. **Land Economics.** II. 3 hr. PR: Econ. 52 or equiv. Classification, development, tenure, use, conservation, valuation and taxation, of rural, urban, mineral, forest, water and recreational land resources.

206. **Farm Planning.** I. 3 hr. PR: Senior standing and Econ. 52 or equiv. Principal factors influencing returns on farms; planning use of labor, soil, crops, livestock, buildings and equipment. Farm visits required.

213. **Economic Development I or II.** 3 hr. PR: Econ. 52. A comprehensive study of the problems, changes and principal policy issues faced by non-industrialized countries in the process of economic development. This is a dual listing with Econ. 213. Students who elect this listing may not receive additional credit for Econ. 213.

230. **Cooperative Organization.** II. 2-3 hr. PR: Econ. 52 or equiv. Organization functions, and contributions of cooperatives in an economic system. Offered in Spring of even years.

235. **Marketing Dairy Products.** II. 2 hr. PR: Econ. 52 or equiv. Milk marketing policies and practices, including milk-market orders. Offered in the Spring of odd years.

240. **Agricultural Prices.** II. 3 hr. PR: Econ. 52 or equiv. An analysis of the price-making forces which operate in the market places for the major agricultural commodities.

255. **Resource Analysis.** I. 3 hr. PR: Senior standing and Econ. 52 or equiv. A study of the factors of land, labor, capital, and management available on farms, in forests, and in agribusiness, the transformation rates from resources into products, and the utilization of economic models consistent with reality, so as to allocate the resources among feasible alternatives into profit maximizing plans with the assistance of electronic equipment.

261. **Agribusiness Finance.** I. 3 hr. PR: Econ. 52 or equiv. Credit needs for agricultural businesses; financing farm and market-agency firms; and organization and operation of credit agencies which finance agricultural business firms. Offered in Fall of odd years.

271. **Agricultural Policy.** II. 3 hr. PR: Econ. 52 or equiv. An examination of the economic aspects of government price programs, production and marketing controls, subsidies, parity, export and import policies, and other programs, affecting agriculture. Offered in Spring of even years.

AGRICULTURAL EDUCATION

118. **Group Organization and Leadership.** II. 2 hr. PR: Consent. Principles and techniques involved in forming, structuring, developing, and directing organizations for effective professional leadership.

Ed. 124. **Student Teaching in Vocational Agriculture.** I, II. 6 hr.

Ed. 160. **Materials For and Method of High School Teaching of Vocational Agriculture.** I, II. 3 hr. PR: Consent. Organization and preparation for teaching vocational agriculture in the high school.

180. **Assigned Topics.** I, II, S. PR: Adequate ability and training for the work proposed and permission to register. (See page 81).

234. **Principles of Cooperative Extension.** I. 2 hr. PR: Consent. Background, philosophy, and history of cooperative extension. Activities of county cooperative extension agents and cooperative extension programs in West Virginia.

238. **Method and Materials in Extension Education.** II. 2 hr. PR: Consent. Organization and preparation for extension teaching and the processes of communication.

239. **Program Building in Cooperative Extension.** I. 3 hr. Organization in relation to program building. Leadership and group action. Overall working and educational objectives, principles, methods and goals in developing county extension programs.

Ed. 276. **Teaching Young, Adult Farmer, and Off-Farm Agricultural Occupations Classes.** I, S. 2 hr. PR: Ed. 105, 106, or consent. Participation in conducting young, adult farmers, and off-farm agricultural occupations classes and school-community food preservation center; organization, course of study, method teaching and supervision of the classes, young farmers' associations, adult farmers' organizations in classes.

Ed. 277. **Organizing and Directing Supervised Farming and Occupational Experience Programs.** II, S. 2 hr. PR: Ed. 160 or consent. Planning programs of supervised farming and supervised occupational experience, supervising and evaluating such programs for day students, young farmer, and off-farm agricultural occupations classes and groups.

AGRICULTURAL ENGINEERING

AGRICULTURAL ENGINEERING

10. **Principles of Agricultural Engineering.** I. 3 hr. PR: Math. 4. Introduction to several fields of agricultural engineering and how they are applied in agriculture and industry. 3 hr. rec.

180. **Assigned Topics.** I, II. 1-3 hr. per sem. (See page 81).

200. **Seminar.** I, II. PR: Senior standing.

201. **Agricultural Structures.** II. 3 hr. PR: T.A.M. 102. Structural design and functional requirements of agricultural buildings. 2 hr. rec., 3 hr. lab.

210. **Application of Electricity to Agriculture.** II. 3 hr. PR: E.E. 106. Economic application of electric light, heat, and power. 2 hr. rec., 3 hr. lab.

220. **Agricultural Process Engineering.** II. 3 hr. PR: C.E. 115, M.E. 121. Application of the fundamentals of engineering to agricultural engineering processes. 2 hr. rec., 1 hr. lab.

230. **Farm Power.** I. 3 hr. PR: M.E. 121. Fundamental theories underlying design and operation of internal combustion engines used in agriculture. 3 hr. rec., 3 hr. lab.

240. **Hydrology.** I. 3 hr. PR: C.E. 115. The study of a hydrologic cycle with emphasis on precipitation and runoff as related to design of hydraulic structures, soil and water conservation, and flood control. 3 hr. rec.

241. **Physical Climatology.** II. 3 hr. PR: Consent. Physical principles underlying the variations and changes in climate; climatic controls; elements of microclimatology; engineering applications and uses of climatic data. 3 hr. rec.

250. **Soil and Water Conservation.** I. 3 hr. PR: C.E. 115. Engineering principles and practices in conservation, utilization, and management of soil and water resources. 2 hr. rec., 3 hr. lab.

290. **Elements of Machinery Design.** II. 3 hr. PR: M.E. 201. Design requirements for construction, principles of operation and adequate adjustment of agricultural machines and principles of testing agricultural equipment. 2 hr. rec., 3 hr. lab.

AGRICULTURAL MECHANICS

152. **Shop Theory and Methods.** I. 3 hr. A course designed to familiarize students with: (1) up-to-date tools, materials, and shop methods; and (2) acceptable methods of developing basic skills with power and hand tools. 1 hr. rec., 6 hr. lab.

180. **Assigned Topics.** I, II, S. (See page 81.)

252. **Advanced Farm Shop.** II. 3 hr. PR: Agr. Mech. 152. Forging, cold-iron work, tool fitting, woodworking. Offers training for teaching shop work in rural high schools. 1 hr. rec., 6 hr. lab.

253. **Advanced Farm Machinery.** II. 3 hr. Performance of agricultural equipment including calibration, efficiency, adjustments, and maintenance. Theoretical and practical aspects of selection based on economics, compatibility of machines with other equipment and the farming operation, service, and factors of custom operation. 2 hr. rec., 3 hr. lab.

259. **Farm Structures.** II. 3 hr. Fundamentals of construction, functional requirements, materials, new equipment, and use of laborsaving ideas and machinery. 2 hr. rec., 3 hr. lab.

270. **Electricity in Agriculture.** II. 3 hr. The fundamentals of electrical energy and its application to lighting, power, heating, and control circuits used in agriculture. 2 hr. rec., 3 hr. lab.

275. **Agricultural Engines.** I. 3 hr. Relation of theory to design and operation of internal combustion engines with emphasis on care, operation, and maintenance. Study covers one, two, three, four, six, and eight cylinder engines, both in two and four stroke cycle designs. 2 hr. rec., 3 hr. lab.

AGRONOMY AND GENETICS

AGRONOMY

2. **Principles of Soil Science.** II. 4 hr. PR: Inorganic Chem. An introduction to soil science. 3 lec., 1 lab.

10. **Forest Soils.** II. 4 hr. PR: Inorganic Chem. Introduction to soil science with particular emphasis on forest soils. 3 lec., 1 lab.

180. **Assigned Topics.** I, II. (See page 81).

210. **Soil Fertility.** I. 3 hr. PR: Agron. 2 or 10. Soil properties in relation to fertility and productivity of soils; evaluation of soil fertility; production of fertilizers and their use in increasing the fertility and productivity of soils.

212. **Soil Conservation and Management.** II. 3 hr. PR: Agron. 210. Principles of soil and water conservation in relation to soil erosion control. Using soil technology to solve soil management problems relating to cropping systems. Offered in Spring of odd years.

216. **Soil Genesis and Classification.** II. 3 hr. PR: Agron. 2 or 10. The classification and mapping of soils. Theory and practice in soil classification, soil mapping, and land judging. Offered in Spring of even years.

230. **Soil Physics.** I. 3 hr. PR: Agron. 2 or 10. Physical properties of soils, water and air relationships and their influence on soil productivity. Offered in Fall of odd years.

250. **Turfgrass Management.** I. 3 hr. PR: Agron. 2, or consent. The establishment, maintenance, and adaptation of grasses and legumes for lawns, golf courses, parks, athletic fields, and roadsides. An understanding of turfgrass management will be developed by associating differential plant responses with soil, climatic, and biotic factors that influence plant species growth, selection, and adaptation. Offered in Fall of even years.

251. **Weed Control.** I. 3 hr. PR: Agr. 52, Agron. 2, or consent. Fundamental principles of weed control. Recommended control measures for and indentification of common weeds. Offered in Fall of odd years.

252. **Grain and Special Crops.** I. 3 hr. PR: Agr. 52, Agron. 2, or consent. Advanced study of methods in the production of grain and special crops. Varieties, improvement, tillage, harvesting, storage and uses of crops grown for seed or special purposes. Offered in Fall of even years.

254. **Pasture and Forage Crops.** II. 4 hr. PR: Agr. 52. Agron. 2, or consent. All phases of pasture and forage crop production, including identification, seeding, management, use, seed production, and storage of forage crops. Offered in Spring of even years.

GENETICS

171. **Principles of Genetics.** II. 3 hr. PR: 8 hr. of biological science. The fundamentals of inheritance. Must be accompanied by Gen. 172.

172. **Genetics Laboratory.** II. 1 hr. PR: Gen. 221 or registration in Gen. 171.

180. **Assigned Topics.** I, II. PR: Gen. 171 or 221 and consent. (See page 81.)

220. **Crop Breeding.** II. 3 hr. PR: Gen. 171 or 221. Methods and basic scientific principles involved in the improvement of leading cereal and forage crops through hybridization and selections. Offered in Spring of odd years.

221. **Basic Concepts of Modern Genetics.** I. 3 hr. PR: 8 hr. of biological science and 1 year of chemistry. Independent inheritance, linkage. Chemical nature of genetic material. Control of phenotype by genetic material. Gene action and coding of genetic material.

224. **Human Genetics.** II. 3 hr. PR: Gen. 171 or 221 or consent. A study of the genetic system responsible for the development of phenotype in man. Offered in Spring of even years.

ANIMAL INDUSTRY AND VETERINARY SCIENCE

ANIMAL INDUSTRY AND VETERINARY SCIENCE

51. **Principles of Animal Science.** I. 4 hr. A comparative study of the production of meat, milk, eggs, and wool. Nutrition, physiology, genetics, hygiene, physical environment, and economics are discussed as bases for sound managerial decisions.

180. **Assigned Topics.** I, II, S. (See page 81.)

195. **Seminar.** II. 1 hr. Senior seminar.

ANIMAL BREEDING AND GENETICS

226. **Breeding of Farm Animals.** I. 3 hr. PR: 3 hr. in Genetics or consent. The application of principles of quantitative population genetics to the improvement of farm animals.

ANIMAL NUTRITION

101. **Animal Nutrition.** I. 3 hr. Digestion and metabolism of food nutrients, nutrient requirements of farm animals, and nutritive values of feeds and rations.

294. **Poultry Nutrition.** II. 3 hr. (1 lab.). Nutritional requirements, nutrient interrelationships and nutritional deficiencies of all types of domesticated fowl. Offered in Spring of even years.

295. **Principles of Nutrition and Metabolism.** I. 3 hr. PR: Agr. Biochem. 202, An. Physiol. 100, or equiv. A basic course in animal nutrition.

ANIMAL PHYSIOLOGY

100. **Introduction to the Physiology of Domestic Animals.** I. 3 hr. PR: Biol. 1 or consent. The function and regulation of the principal systems of the animal body.

204. **Animal Physiology Laboratory.** I. 2 hr. PR: An. Physiol. 100 or concurrent registration.

225. **Physiology of Reproduction.** II. 3 hr. PR: Biol. 2 or consent. Comparative physiology of reproduction in higher animals, endocrine functions involved in reproduction, genetic and environmental variations in fertility mechanisms.

227. **Milk Secretion.** II. 3 hr. (1 lab.). PR: Organic Chem.; An. Physiol. 225. The evolution, anatomy, and growth of the mammary gland. The chemical, hormonal, physiological and environmental factors affecting lactation. Offered in Spring of odd years.

235. **Comparative Endrocrinology of Reproduction.** II. 2 hr. (1 lab.). PR: An. Physiol. 100 or Zool. 271; An. Physiol. 225 or Zool. 272 (concurrent), or consent. Laboratory experience in classical reproductive endocrinology and current concepts of hormonal regulation with emphasis on species differences and similarities.

280. **Behavioral Patterns of Domestic Animals.** II. 3 hr. (1 conf.). Examination of the bases for and exhibition and control of behavioral patterns of domestic animals. Offered in Spring of odd years.

NOTE: Students are also referred to Psych. 201, Physiological Psychology; Zool. 271, Human Physiology; Zool. 273, 274, Cellular Psysiology; and Zool. 276, Comparative Physiology.

ANIMAL PRODUCTION

108. **Poultry Plant Experience.** I, II, S. 1 hr. (3 hr. lab.). Experience in operating a poultry farm, including trapnesting, incubation, and pedigreeing. A report will be required.

122. **Milk Production.** II. 3 hr. (1 lab.). Feeding and management of dairy cattle.

*123. **Dairy Cattle History and Selection.** II. 3 hr. (2 labs.). To familiarize the student with the history, development and programs of the breeds of dairy cattle as well as the modern concepts in phenotypic evaluation.

*138. **Grading and Selection of Meat and Meat Animals.** II. 3 hr. (2 labs.). Appraisal of live meat animals, carcasses and cuts; and the evaluation of scientific techniques used in selecting meat animals and evaluating carcass meat.

*141. **Beef Production.** I. 3 hr. (1 lab.). PR: An. Nutr. 101. Physiological and economical bases of beef production.

*142. **Pork Production.** II. 3 hr. (1 lab.). PR: An. Nutr. 101. Physiological and economical bases of pork production. Offered in Spring of even years.

143. **Selection, Evaluation, and Grading of Meat Animals, Carcasses and Cuts.** I. 2 or 4 hr. PR: An. Prod. 138 and consent. Evaluation of breeding merit and potential carcass characteristics of red meat animals; evaluation of meat quality and other factors affecting the marketability of meat. Tours of representative flocks, herds, and packing plants will be required.

162. **Sheep Production.** II. 3 hr. (1 lab.). PR: An. Nutr. 101. Physiological and economical bases of sheep production. Offered in Spring of odd years.

201. **Advanced Poultry Production.** I. 3 hr. Special phases of broiler and egg production, disease control, laborsaving studies, recent designs in building and heating equipment for all types of poultry. Offered in Fall of even years.

223. **Advanced Livestock Production.** 3 hr. Animal Nutrition 101 and consent. Evaluation of current research—Animal Breeding, Nutrition and Physiology and its application to production and management of beef cattle, sheep, swine, and dairy cattle.

224. **Current Literature in Animal Science.** II. 3 hr. (1 lab.). PR: An. Nutr. 101. Evaluation of current research in animal science and its application to production and management.

FOOD SCIENCE

12. **Dairy Technology.** II. 3 hr. (1 lab.). Introductory. Composition and properties of milk and milk products; butterfat testing; manufacture of dairy products. Offered in Spring of odd years.

106. **Poultry Products Technology.** I. 2 hr. (1 lab.). To familiarize the student with poultry and egg grades, and factors and conditions that determine and influence the quality of poultry products. Offered in Fall of odd years.

107. **Milk and Public Health.** I. 3 hr. (1 lab.). Food value of milk and its production and processing in relation to public health. Offered in Fall of odd years.

124. **Judging Dairy Products.** II. 2 hr. (2 labs.). A laboratory course in evaluating and judging dairy products.

130. **Market Milk Products and Frozen Desserts.** I. 4 hr. (1 lab.). The assembling, processing, packaging, storing and merchandising of dairy products. Offered in Fall of even years.

*167. **Meats.** I. 3 hr. (2 labs.). Processing, curing, and care of meats. Visit to one of the large packing houses of Pittsburgh required.

*202. **Advanced Meats.** II. 3 hr. (2 labs.). PR: Food Sci. 167. Studies covering composition of meat, complete fabrication of meat animal carcasses, factors influencing yield, physiology and chemistry of pertinent phenomena, and merchandising of meat. Offered in Spring of even years.

VETERINARY SCIENCE

102. **Animal Pathology.** I. 3 hr. Diseases of domestic animals, with special emphasis on the common diseases.

206. **Parasites and Pathology.** II. 3 hr. PR: Biol. 2 or equiv. Common parasites of farm animals, their control, and their effect upon the host. Offered in Spring of odd years.

*Transportation for required trips in connection with these courses will generally be supplied by the College. Students will be responsible for their meals and lodging.

210. **Principles of Laboratory Animal Science.** II. 3 hr. (1 lab.). PR: Consent for undergraduates. The management, genetics, physiology, nutrition, diseases and germ free methods of the common laboratory animals.

HORTICULTURE

HORTICULTURE

107. **General Horticulture.** I. 3 hr. PR: Biol. 1, Agr. 52, or consent. Principles underlying present day horticultural practice with special emphasis on how basic discoveries in plant science have been applied in horticulture.

115. **Judging and Identification of Apple Varieties.** I. 1 hr. Two laboratory periods first half of semester. Identification and judging of apple varieties.

116. **Flower Judging.** II. 1 hr. One laboratory period per week. Identification and judging of flowers with emphasis on the aesthetic values which underlie desirability in a variety.

117. **Vegetable Identification and Judging.** I. 1 hr. Identification and judging the common vegetables and the tests associated with olericulture in West Virginia. Emphasis is placed in the cultural practices associated with top quality vegetables.

141. **Greenhouse Management.** II. 3 hr. A practical study of greenhouses.

151. **Floral Design.** I. 3 hr. PR: Hort. 141 or consent. A basic course in flower arrangement to cover all occasions for the home and retail flower shop.

160. **Woody Plant Materials.** I. 3 hr. Identification, ecology, and evaluation of trees, shrubs, vines and groundcovers for landscape plantings.

161. **Woody Plant Materials.** II. 3 hr. PR: Hort. 160 or consent. Identification, ecology and evaluation of trees, shrubs, vines and groundcovers for landscape plantings.

162. **Plant Materials.** II. 3 hr. PR: Hort. 161 or consent. Identification, description, adaptability and evaluation of the principal kinds and varieties of annual and herbaceous perennials with emphasis on their use as design elements.

180. **Assigned Topics.** I, II, S. (See page 81.)

204. **Plant Propagation.** II. 3 hr. A study of the practices of plant propagation and the factors involved in reproduction in plants.

229. **Landscape Design.** I. 3 hr. (1 lec., 1 scheduled lab., 1 arranged lab.). A course in ornamental horticulture giving an appreciation of the basic principles of design and information pertaining to the use and care of ornamental plants around the home.

242. **Small-Fruits.** I. 3 hr. (2 lec., 1 scheduled lab.). PR: Agr. 52, Hort. 107, or consent. The taxonomic, physiological and ecological principles involved in the production and handling of small-fruits.

243. **Physiology of Vegetables.** I. 3 hr. (2 lec., 1 scheduled lab.). PR: Agr. 52. Physiological and ecological principles involved in the production of vegetable crops.

244. **Handling and Storage of Horticultural Crops.** II. 3 hr. (2 lec., 1 scheduled lab.). PR: Agr. 52, Chem. 16. Characteristics of perishable crops. Methods and materials employed to maintain quality.

ENTOMOLOGY

152. **Forest Entomology.** II. 3 hr. PR: Forestry 112. Relationships between insects and the forest; recognition and control of important species. This course is primarily designed for forestry students.

180. **Assigned Topics.** I, II, S. (See page 81.)

202. **Agricultural Entomology.** II. 4 hr. PR: Biol. 1, 2. The basic aspects of insect life, emphasizing the study of economically important insects and their control. Designed to meet the needs of students in agriculture. Does not carry graduate credit for majors in Entomology.

LANDSCAPE ARCHITECTURE

12. **History of Landscape Architecture.** II. 3 hr. Landscape design from early times in Asia, Europe, and the American scene.

20. **Architectural Design.** I. 4 hr. Introduction to the architectural elements involving the expression of a variety of materials in two- and three-dimensional design.

21. **Architectural Design.** II. 4 hr. Continuation of L.A. 20 with a study of more complicated problems to further develop analytical and creative ability.

50. **Theory of Landscape Architectural Design.** I. 3 hr. PR: L.A. 21. Introduction to basic theory and landscape design principles.

51. **Landscape Architectural Design.** II. 3 hr. PR: L.A. 50. Problems in basic landscape design to acquaint the student with the various materials and to develop his capacity to design in the outdoor space.

62. **Professional Experience.** S. No credit. Experience in a landscape architectural position with a private or public organization is invaluable to the training of a student. Completion of a minimum of three months' experience is required prior to graduation. Evidence of work completed will be handled at the discretion of the Department of Horticulture.

131. **Landscape Architectural Construction.** I. 3 hr. PR: L.A. 51. Landscape structures, their use in design including selection and use of materials.

132. **Landscape Construction.** II. 3 hr. PR: L.A. 131. Preparation of grading and drainage plans including specifications and cost estimates.

150. **Landscape Architectural Design.** I. 4 hr. PR: L.A. 51. Design problems involving private, public, and semi-public areas with emphasis on plan analysis, detail, and presentation. Problems are integrated with construction and plant materials.

151. **Landscape Architectural Design.** II. 4 hr. Continuation of L.A. 150.

180. **Assigned Topics.** I, II, S. (See page 81.)

241. **Planting Design.** I. 3 hr. PR: Hort. 161, Hort. 162, or consent and L.A. 51. Laboratory design problems in the use of plant materials with emphasis on plants as objects of the design and their association and arrangement for landscape effect.

242. **Planting Design.** II. 2 hr. Continuation of L.A. 241.

248. **Design Analysis.** II. 3 hr. PR: L.A. 150, 241. Analysis of executed problems through discussions involving basic theory, readings, and reports.

250. **Landscape Architectural Design.** I. 5 hr. PR: L.A. 151, 242. Advanced design problems; a continuation of L.A. 150 and 151 with emphasis on site function and detail.

251. **Landscape Architectural Design.** II. 5 hr. Continuation of L.A. 250.

265. **Introduction to Urban Planning.** I. 3 hr. PR: Consent of department chairman. Background history of city planning and survey data necessary for preparation of master plan.

276. **Recreation Planning.** I. 3 hr. PR: L.A. 151. Design of park and recreation areas involving park history, classification theory, and administration.

278. **Site Planning Projects.** I. 4 hr. PR: L.A. 250. Preparation of site plans and master programs, housing subdivisions, and institutional areas. Professional practice and ethics are integrated with the master program.

284. **Professional Practice.** II. 2 hr. The profession of landscape architecture involving the procedures in the preparation of contract documents, fees, estimates, operation of an office, and the relationship to clients and contractors.

PLANT PATHOLOGY AND BACTERIOLOGY

BACTERIOLOGY

141. **General Bacteriology.** I, II. 4 hr. PR: Inorganic Chem. Introductory morphological, cultural, and physiological characteristics of bacteria; application of bacteriology to agriculture, home economics, sanitation, and health.

180. **Assigned Topics.** I, II, S. (See page 81.)

247. **Food Microbiology.** I. 4 hr. PR: Bact. 141, Organic Chem. or consent. The ecology and physiology of microorganisms important in the manufacture and deterioration of foods and the techniques for the microbiological examination of foods. Offered in Fall of even years.

248. **Sanitary Bacteriology.** I. 3 hr. PR: Bact. 141. Standard bacteriological methods used in routine examination of water and sewage. Offered in Fall of odd years.

PLANT PATHOLOGY

153. **Forest Pathology.** I. 3 hr. PR: Biol. 2, For. 112. Important diseases of forest and shade trees. Causes and methods of control.

180. **Assigned Topics.** I, II, S. (See page 81.)

201. **General Plant Pathology.** I. 4 hr. PR: Bact. 141. Nature and cause of plant diseases; methods of control.

202. **Principles of Plant Pathology.** II. 4 hr. PR: Bact. 141 and either Plant Path. 153, 201, or 203, or consent. Primarily for graduate students and seniors majoring in botany, biology, or agricultural science. Nature of diseases in plants with practice in laboratory methods. Offered in Spring of even years.

203. **Mycology.** I. 4 hr. Lectures and field and laboratory studies of parasitic and saprophytic fungi.

209. **Nematology.** I. 3 hr. PR: Pl. Path. 201 or consent. Primarily for graduate students majoring in the agricultural sciences, zoology or botany. Nematode taxonomy, bionomics, and control, with particular emphasis on plant parasitic forms. Offered in Fall of even years.

The Division of Forestry

FACULTY

David E. White, B.S., M.S., Ph.D., *Director, Division of Forestry; Assistant Professor of Forest Economics* (1966), 1964.

H. Phillip Berthy, B.S.F., M.S., *Associate Professor and State Extension Specialist—Wood Utilization* (1963), 1950.

Arthur B. Brauner, B.S., M.W.T., *Assistant Professor of Wood Science* (1966), 1963.

George H. Breiding, B.S., *State Extension Program Leader—Outdoor Recreation; Assistant Professor of Forestry* (1963), 1950.

Daniel W. Bousquet, B.S., M.S., *Instructor and Area Extension Specialist—Wood Utilization* (1966).

Samuel M. Brock, B.S., M.F., Ph.D., *Associate Professor of Forest Economics* (1967), 1965.

Maurice G. Brooks, A.B., M.S., D.Sc., *Professor of Wildlife Management* (1947), 1923.

James H. Brown, B.S.F., M.F., *Assistant Professor of Silviculture and Assistant Silviculturist* (1957).

Kenneth L. Carvell, B.A., M.F., D.For., *Professor of Silviculture and Silviculturist* (1964), 1953.

Franklin C. Cech, A.B., B.S.F., M.F., Ph.D., *Associate Professor of Forest Genetics and Associate Forest Geneticist* (1964).

John D. Gill, B.S., M.S., *Assistant Professor of Wildlife Management* (1967). (Wildlife Biologist, U.S. Forest Service Forestry Sciences Laboratory).

Allen W. Goodspeed, B.S., M.F., *Professor of Forest Management and Forester* (1949).

Albert E. Grafton, B.S.F., M.S., *Instructor in Forestry* (Assigned to Egerton College, Kenya) (1965), 1963.

William N. Grafton, B.S.F., M.S.F., *Instructor and Area Extension Specialist—Forestry* (1966).

David A. Groom, B.S., M.W.T., *Instructor and Research Assistant in Wood Science* (1966), 1964.

John R. Hamilton, B.S.F., M.S.F., Ph.D., *Professor of Wood Science and Wood Scientist* (1964).

William M. Healey, B.S., *Instructor in Wildlife Management* (1967). (Wildlife Biologist, U.S. Forest Service Forestry Sciences Laboratory).

Norman D. Jackson, B.S.F., M.W.T., *Assistant Professor of Wood Science and Assistant Wood Scientist* (1961), 1953.

William E. Kidd, Jr., B.S., M.S., *Assistant Professor and State Extension Specialist—Forest Management* (1965).

Christian B. Koch, B.S.F., M.S., Ph.D., *Professor of Wood Science and Wood Scientist* (1967), 1951.

Don L. Kulow, B.S., M.F., Ph.D., *Assistant Professor of Forest Mensuration and Assistant Forest Mensurationist* (1963).

Donald M. Onysko, B.S.C.E., D.I.C., *Research Assistant in Wood Science* (1965).

W. Clement Percival, B.S., M.S., Ph.D., *Professor of Forestry, (Division Director—Retired)* (1966), 1934.

H. Reed Sanderson, B.S., M.S., *Assistant Professor of Wildlife Management* (1967). (Wildlife Biologist, U.S. Forest Service Forestry Sciences Laboratory).

Robert L. Smith, B.S., M.S., Ph.D., *Associate Professor of Wildlife Management and Associate Wildlife Biologist* (1966), 1958.

Jack W. Thomas, B.S., *Assistant Professor of Wildlife Management* (1967). (Wildlife Biologist, U.S. Forest Service Forestry Sciences Laboratory).

George R. Trimble, Jr., B.S.F., *Assistant Professor of Forest Management* (1967). (Project Leader, Timber Management Research, U.S. Forest Service, Parsons Timber and Watershed Laboratory).

Earl H. Tryon, B.S., M.S., Ph.D., *Professor of Silviculture and Silviculturist* (1952), 1945.

Kenneth P. Wolfe, B.S.F., *Research Assistant in Forest Genetics* (1966).

Delbert N. Wolff, B.S.F., *Research Assistant, and Forest Superintendent, West Virginia University Forest* (1965).

William L. Wylie, B.S., *Instructor in Forest Recreation* (1967).

General Information

ORGANIZATION AND PURPOSE

In its Division of Forestry, West Virginia University offers five curriculum options of four years each, three leading to the professional degree of Bachelor of Science in Forestry, one leading to the degree of Bachelor of Science in Wood Science, and one leading to the Bachelor of Science degree. A student may major in forest management, wildlife management, wood industry, wood science, or forest science.

The field of forestry is a broad one. Those who enter it must receive an education of a breadth equal to that of the profession which they expect to make their life work. The professional forester's work includes such diversified activities as timber production, logging, surveying, timber estimating, park management, forest protection, forest-stand improvement, flood control, watershed protection, soil erosion control, submarginal land development, restoration of game, forest-game management, stream development, lumber dry-kiln operation, plywood and furniture manufacture, timber preservation, and construction of public camps and summer homesites.

The wide scope of the modern field of forestry demands a thorough basic training for the professional forester. This accounts for the large number of required courses in the professional forestry curricula. If a forester wishes to specialize in any one branch of the field, graduate work is needed.

The curriculum options in forest management, wildlife and fish management, and wood industries include a two-years' broad foundational study of the natural and social sciences basic to the field of forestry. This is followed in the junior and senior years by a more detailed study of the principles and techniques. Many of the courses provide field laboratories, enabling the student to see first-hand application of the principles presented in the classroom and to experiment with the various techniques he is learning.

The curriculum options in wood science and in forest science are specifically intended to prepare students for graduate work in the technical phases of wood use or forest production. These are offered primarily for students who anticipate careers in research or teaching.

Recreation on forest lands has become an activity and a use of major importance. To meet the need for foresters trained to organize and supervise recreation activities, students who are candidates for the Bachelor of Science in Forestry degree may elect a program of studies directed especially toward forest recreation activities. The Division of Forestry, with the cooperation of such other University departments as recreation, horticulture, psychology, and sociology, offer the courses which have been considered basic to recreation training.

In addition to the forestry work which forms a part of the regular courses at the University and the summer Forestry Camp, students in the forest management, wildlife and fish management, and wood industries options are encouraged to devote the summers to employment with a forestry unit or wood-using industry; wood science students are expected to find employment with a forest products laboratory, wood-using industry, or related facility; and forest science majors may work for a forest research center. This gives further experience which is valuable in connection with their formal courses as well as in obtaining permanent employment after graduation.

Many opportunities for summer employment are arranged through the Division of Forestry with the United States Forest Service and with private forest industries which are members of the National Lumber Manufacturers Association. The remunerations for such temporary undergraduate employment varies from about $300 to $325 per month.

FACILITIES FOR INSTRUCTION

The Division of Forestry is one of thirty-one forestry schools in the country fully accredited by the Society of American Foresters. Situated in Morgantown, it is favorably located in relation to forests available for educational and research use.

The new Forestry Center, located on the Evansdale Campus, provides the most modern facilities for forestry instruction and research. This structure, completed in

1965 at a cost of $2.5 million, contains specialized laboratories for all phases of forestry activities, classrooms, faculty offices, graduate offices and labs, a forestry reading room, student lounge, and locker facilities.

The wood science area includes wood seasoning and preservation labs with dry kilns, treating vats, and pressure units designed to duplicate all methods of drying and preserving wood. In the wood processing area, woodworking equipment is available for preparing wood specimens for study and research work.

The wood identification and chemistry laboratories provide facilities for the detailed study of wood structures and wood chemistry. A wood finishing area houses modern spray booths for instruction and research in the various techniques of wood finishing. Other wood science facilities include space for assembling, bonding and testing laminated beams, and a nuclear reactor.

The forest management area contains special laboratories for the study of silvics, silviculture, management, valuation, economics, and photogrammetry, as well as a statistical lab, weighing room, and radioactive counter room.

In the forest recreation area undergraduate, graduate, and faculty labs are provided for wildlife, fisheries, and recreation studies.

The forestry reading room has been developed primarily for student use. It contains more than 20,000 catalogued books and bulletins covering the field of forestry. Periodicals of interest to the forester may be readily found.

Coopers Rock State Forest, an area of 13,000 acres fronting on Cheat Lake, is less than 10 miles from the University. The Division of Forestry has a 99-year lease on 7,500 acres of this forest. The tract, now known as the West Virginia University Forest, is managed by the Division and is used for teaching, research and demonstration purposes. The Monongahela National Forest lies within 45 miles of Morgantown. The University Farm Woods, 100 acres bearing mature timber, is within two miles. Acquisition of the 500-acre Tygart Valley Forest at Dailey has increased the educational and research facilities of the Division. These forests are utilized by forestry students for study during their four years of training.

During 1966, an agreement was completed between West Virginia University and Georgia-Pacific Corporation. This agreement made a 3,000-acre tract in Mingo County available for research in applied forestry. Forest management, silvicultural, and wildlife studies are in progress on this tract.

Coopers Rock Recreation Area, including the tent camping and picnic facilities, the Chestnut Ridge group camp and ski area, Mont Chateau State Park, and Cheat Lake, are available forest recreation areas for laboratory use.

SUMMER FIELD PRACTICE AND WOOD UTILIZATION PRACTICUM

The six-week Summer Field Practice consists of two consecutive three-week sessions, and is designed for students who have completed the sophomore year of the forest management or wildlife and fish management curriculum options. Students live in Morgantown in University- or privately-owned housing, and travel to the nearby University Forest daily for field studies. The instructional program provides training in forest surveying, timber estimating, photo interpretation, forest management, and forest recreation. Occasional trips are made to wood-using industries, and to other forests to study the management of northern hardwood and spruce types. The Summer Field Practice culminates in a one-week trip to North Carolina where silvicultural and management activities are observed in the Southern Pine Region.

The six-week Wood Utilization Practicum is designed for students who have completed the sophomore year of the wood industry curriculum option. The first week consists of field exercises in surveying and mensuration. The following three weeks are devoted to laboratory exercises to provide a basic understanding of the technical aspects of products manufacturing. During the laboratory period special emphasis will be given to the use of analytical equipment, gluing, machining, and the preparation and testing of glue laminates, plywood, hardboard and particle board. The final two-week period will consist of a trip to observe various commercial wood-using industries.

For resident students the cost is $8.00 per credit hour; for non-residents, tuition is $32.00 per credit hour. A laboratory fee of $20.00 is charged to all students. These

must be paid to the University Comptroller at the time of registration. Other expenses include $10.00 ($20.00 for Wood Industry majors) for lodging on the southern trip. All University fees are subject to change without notice.

Requirements for the Degrees

The Division of Forestry offers three curriculum options leading to the degree of Bachelor of Science in Forestry (B.S.F.). These include the forest management, wildlife and fish management, and wood industry options. The curriculum in wood science leads to the degree of Bachelor of Science in Wood Science (B.S.W.S.). Students completing the requirements of the forest science curriculum receive a Bachelor of Science degree.

FOREST MANAGEMENT

The forest management option offers a strong basic course in Forestry leading particularly to employment in the management of forest land. It is designed to train the student for a professional forestry career in either public or private forestry.

Graduates are prepared to hold positions with the various state forestry and conservation departments, the U.S. Forest Service, the Forestry Division of the U.S. Indian Service, the Soil Conservation Service, and the other federal and state agencies employing professional foresters. They may also be employed by private forest land owners—both corporate and individual—or may enter business as consulting foresters. This option provides a good background for graduate work in all phases of forest production management.

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bot. 1—General	4	Zool. 2—General	4
Chem. 15—General	4	Chem. 16—General	4
English 1—Composition	3	English 2—Composition	3
For. 1—Profession	1	For. 4—Convocation	0
For. 3—Convocation	0	Math. 4—Plane Trigonometry	3
Math. 2—Algebra	3	Mil. Sci. or A.S. 2	2
Mil. Sci. or A.S. 1	2	Phys. Ed. 2—General Program	1
Phys Ed. 1—General Program	1		
	18		17

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bot. 61—Systematic	2	Agron. 10—Forest Soils	3
Bot. 67—Dendrology	4	Bot. 171—Plant Physiology	3
C.E. 5—Land Surveying	4	C.E. 6—Topographic Mapping	2
Econ. 51—Principles	3	Econ. 52—Principles	3
For. 5—Convocation	0	For. 6—Convocation	0
For. 11—Silvics	3	For. 21—Mensuration	4
Mil. Sci. or A.S. 3	2	Mil. Sci. or A.S. 4	2
	18		17

SUMMER PRECEDING THIRD YEAR

6 Weeks, 6 Credit Hours

For. 106—Forest Surveying and Mensuration Field Practice	3
For. 107—Forest Management, Utilization, and Wildlife Practice	3
	6

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
For. 112—Silvicultural Systems	3	For. 113—Seeding and Planting	3
For. 130—Wood Technology	3	For. 114—Forest Economics	3
For. 151—Protection	2	For. 124—Forest Finance	3
Physics 1—Introductory	4	For. 136—Wood Processes and Products	3
Electives	6	Electives	5
	18		17

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
For. 116—Regional Silviculture	2	For. 125—Policy and Administration	3
For. 123—Management	4	For. 126—Forest Measurement by Aerial Photographs	2
For. 141—Wildlife Management	3	Entomol. 152—Forest Entomology	3
Pl. Path. 153—Forest Pathology	3	Electives	9
Electives	6		
	18		17

WILDLIFE AND FISH MANAGEMENT

The wildlife and fish management option is designed to give basic undergraduate training in wildlife and fisheries biology. Students who elect this option will satisfy the requirement for graduation by completing successfully 150 credit hours, including all the required courses listed below, and elective courses in botany, zoology, bacteriology, and other related fields. Those completing the curriculum are granted the degree of Bachelor of Science in Forestry.

Many wildlife and fisheries biology positions require the Master's Degree, and majors in this curriculum are encouraged to enroll for graduate work in other institutions. Graduates in wildlife management will, however, meet all requirements for taking the U. S. Civil Service examination for biologist, and will ordinarily meet all requirements for the entering examination in general forestry.

Students in wildlife management will be advised to include among their electives, Zool. 205, Principles of Evolution; Zool. 224, Limnology; Zool. 251, Invertebrate Zoology; Zool 263, Ichthyology; Zool. 264, Fishery Biology; Zool. 265, Ornithology; Bot. 221, Plant Ecology; Agron. 254, Pasture and Forage Crops; Genetics 171-172; and Statistics 101 and 211.

Students wishing to be qualified as fishery biologists may substitute Zool. 224, 251, 263, and 264 for the Zoology courses.

FIRST YEAR

First. Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bot. 1—General	4	Zool. 2—General	4
Chem. 15—General	4	Chem. 16—General	4
English 1—Composition	3	English 2—Composition	3
For. 1—Profession	1	For. 4—Convocation	0
For. 3—Convocation	0	Math. 4—Plane Trigonometry	3
Math. 2—Algebra	3	Mil. Sci. or A.S. 2	2
Mil. Sci. or A.S. 1	2	Phys. Ed. 2—General Program	1
Phys. Ed. 1—General Program	1		
	18		17

SECOND YEAR

First. Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bot. 67—Dendrology	4	Agron. 10—Forest Soils	3
C.E. 1—Surveying	2	Bot. 171— Plant Physiology	3
Econ. 51—Principles	3	C.E. 6—Topographic Mapping	2
For. 5—Convocation	0	For. 6—Convocation	0
For. 11—Silvics	3	For. 21—Mensuration	4
Mil. Sci. or A.S. 3	2	Mil. Sci. or A.S. 4	2
Electives	4	Electives	4
	18		18

SUMMER PRECEDING THIRD YEAR

6 Weeks, 6 Credit Hours

For. 106—Forest Surveying and Mensuration Field Practice	3
For. 107—Forest Management, Utilization, and Wildlife Practice	3
	6

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
For. 112—Silvicultural Systems	3	For. 113—Seeding and Planting	3
For. 130—Wod Technology	3	For. 114—Forest Economics	3
For. 151—Protection	2	For. 136—Wood Processes and Products	3
Zool. 250—Animal Systematics	2	Electives	9
Physics 1—Introductory	4		
Electives	3-4		
	17-18		18

FOURTH YEAR

First. Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bot. 161—Systematics	4	For. 125—Policy and Administration	3
For. 123—Management	4	For. 126—Forest Measurement by Aerial Photographs	2
For. 141—Wildlife Management	3	For. 144—Forest Zoology	3
Zol. 231—Comparative Anatomy *or*	5	For. 145—Life Histories of Game Animals	3
Zol. 271—Vertebrate Physiology	4	Entomol. 152—Forest Entomology	3
		Electives	4
	15-16		18

WOOD INDUSTRY

The four-year wood industry option leads to the degree of Bachelor of Science in Forestry and is designed to develop foresters for work with wood-using industries. The wood-using industry includes basic lumber, veneer, paper, and allied products, and ranks fourth in the nation in the number of wage earners employed.

This option also requires sufficient undergraduate courses in the College of Commerce to enable qualified students to earn an M.S. or M.B.A. degree in that college after an additional year of study at the graduate level. A student with undergraduate training in wood industry, followed by graduate training in business administration or economics, will be in demand for managerial positions in the wood-using industries.

Students in the wood industry option who do not qualify for graduate work may earn a second undergraduate degree in the College of Commerce in one year by completing a minimum of 30 semester hours which include the basic commerce courses.

FIRST YEAR

First. Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bot. 1—General	4	Chem. 12 or 16	4
Chem. 11 or 15—General	4	English 2—Composition	3
English 1—Composition	3	For. 4—Convocation	0
For. 1—Profession	1	Math. 4—Plane Trigonometry	3
For. 3—Convocation	0	Mil. Sci. or A.S. 2	2
Math. 2—Algebra	3	Phys. Ed. 2—General Program	1
Mil. Sci. or A.S. 1	2	Electives	5
Phys. Ed. 1—General Program	1		
	18		18

SECOND YEAR

First. Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bot. 67—Dendrology	4	Econ. 52—Principles	3
C.E. 1—Surveying	2	For. 6—Convocation	0
Econ. 51—Principles	3	For. 21—Mensuration	4
For. 5—Convocation	0	Mil. Sci. or A.S. 4	2
For. 11—Silvics	3	Electives	9
For. 131—Wood Indentification	3		
Mil. Sci. or A.S. 3	2		
	17		18

SUMMER PRECEDING THIRD YEAR

6 Weeks, 6 Credit Hours

For. 108—Wood Utilization Practicum	6
	6

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Acctg. 1—Principles of Accounting	3	Acctg. 2—Principles of Accounting	3
For. 112—Silvicultural Systems	3	For. 114—Forest Economics	3
For. 132—Properities of Wood	3	For. 136—Wood Processes and Products	3
For. 151—Protection	2	Entomol. 152—Forest Entomology	3
Physics 1—Introductory	4	Management 111—Industrial Mgmt.	3
Electives*	3	Electives	3
	18		18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bus. Adm. 111—Business Law**	3	Econ. 125—Statistics**	3
Fin. 111—Business Finance *or*	3	For. 135—Seasoning and Preservation	4
For. 124—Finance	3	For. 137—Grading Wood Products	3
For. 123—Management	4	Markt. 111—Principles of Marketing	3
Pl. Path. 153—Forest Pathology	3	Statistics 238—Statistical Quality Control	3
Electives	5		
	18		16

*Econ. 111 should be elected by students planning graduate work in economics.
**Students who are particularly interested in wood processes and properties may substitute For. 231 and For. 236 for Bus. Adm. 111 and Econ. 125.

WOOD SCIENCE

The option in wood science is intended to prepare students to pursue graduate work in the technical phases of wood use or to enter directly into positions dealing with the conversions of forest crops into useful products. Such positions may be either governmental or industrial, with both groups further divided into various degrees of administrative, research, or developmental effort.

Students electing to enter the field of wood science should demonstrate a marked facility in mathematics, physics, and chemistry, since these basic sciences form the foundation for a large part of the knowledge involved in the properties and processing of wood.

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bot. 1—General	4	Bot. 171—Plant Physiology	3
English 1—Composition	3	C.E. 1—Surveying	2
For. 1—Profession	1	English 2—Composition	3
For. 3—Convocation	0	For. 4—Convocation	0
Math. 15—Calculus I	4	Math. 16—Calculus II	4
Mil. Sci. or A.S. 1	2	Mil. Sci. or A.S. 2	2
Phys. Ed. 1—General Program	1	Phys. Ed. 2—General Program	1
	15		15

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 15—General	4	Chem. 16—General	4
For. 5—Convocation	0	For. 6—Convocation	0
For. 131—Wood Identification	3	For. 21—Mensuration	4
Math. 17—Calculus III	4	Physics 102—General	4
Mil. Sci. or A.S. 3	2	T.A.M. 101—Statics	3
Physics 11—General	4	Mil. Sci. or A.S. 4	2
	17		17

SUMMER PRECEDING THIRD YEAR

A minimum of 10 weeks of summer employment with a forest products laboratory, wood-using industry, or related facility will be required.

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 133—Organic	3	Chem. 143—Physical	3
Chem. 135	1	For. 114—Forest Economics	3
Econ. 51—Principles	3	For. 136—Wood Processes and Products	3
Bot. 67—Dendrology	4	Electives	9
For. 11—Silvics	3		
For. 132—Properities of Wood	3		
T.A.M. 102—Mechanics of Materials	3		
	20		18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Speech 11—Principles	3	For. 135—Seasoning and Preserv.	4
Restricted Electives*	11	Restricted Electives*	7
Core or General Electives	5	Core or General Electives	8
	19		19

*Restricted Electives: Eighteen credit hours must be taken from among the following list of courses in: agriculture, biology, botany, chemistry, engineering, forestry, languages, mathematics, and physics.

List of Approved Restricted Electives for Wood Science Curriculum

AGRICULTURE: Genet. 221, 3 hr.; Plant Path. 153, 3 hr.

BOTANY AND BIOLOGY: Bot. 221, 4 hr.; Biol. 211, 3 hr.

CHEMISTRY: Chem. 111, 4 hr.; Chem. 115, 3 hr.; Chem. 101, 3 hr.; Chem. 244, 2 hr.

ENGINEERING: Mat.Sci. 255, 3 hr.; C.E. 160, 4 hr.; C.E. 170, 3 hr.; C.E. 260, 3 hr.; C.E. 270, 3 hr.; C.E. 271, 3 hr.; E.E. 105, 4 hr.; E.E. 120, 3 hr.; E.E. 121, 2 hr.; I.E. 140, 3 hr.; I.E. 250, 3 hr.; I.E. 288, 2 hr.; T.A.M. 103, 3 hr.; T.A.M. 104, 3 hr.; T.A.M. 200, 3 hr.; T.A.M. 203, 3 hr.; M.E. 20, 3 hr.

FORESTRY: For. 112, 3 hr.; For. 123, 4 hr.; For. 124, 3 hr.; For. 137, 3 hr.; For. 151, 2 hr.; For. 170, 171, 172, 173, Forestry Problems, 1 hr. each; For. 222, 3 hr.; For. 231, 3 hr.

LANGUAGES: German 121 and 122, 6 hr.; Russian 1 and 2, 6 hr.; French 1 and 2, 6 hr.

MATHEMATICS: Math. 140, 3 hr.; Math. 251, 3 hr.; Math. 252, 3 hr.; Math. 256, 3 hr.

PHYSICS: Physics 113, 114, 3 hr. per sem.; Physics 117, 3 hr.; Physics 221, 3 hr.; Physics 284, 3 hr.

STATISTICS: Statistics 211, 3 hr.; Statistics 212, 3 hr.

OPTION LEADING TO GRADUATE STUDY IN ENGINEERING

There is a need for wood engineers to carry on research and developmental work for industrial and governmental organizations. The wood science option offers an opportunity to enter this important and rewarding field of work. Qualified students first complete four years of undergraduate study for the degree of Bachelor of Science in Wood Science (B.S.W.S.) and then study an additional year at the graduate level in the College of Engineering for the degree of Master of Science in Engineering (M.S.E.).

Those students who are interested in this program should take the following courses as restricted electives in their undergraduate program:

ENGINEERING: C.E. 160, C.E. 260, C.E. 270, C.E. 271, T.A.M. 104.

MATHEMATICS: Math. 140.

FOREST SCIENCE

The forest science option is intended specifically to prepare students for graduate work in one of the forest sciences. This curriculum is strong in the basic sciences, has enough elective hours to accommodate the students' special needs, as well as provide for the Core Curriculum requirements. Students completing the requirements of this curriculum option receive a Bachelor of Science (B.S.) degree.

Students electing the forest science option will be assigned an appropriate adviser in the area in which they plan to specialize. The student will officially enter this curriculum at the end of the sophomore year. At that time he must have completed all freshman and sophomore requirements, or their equivalent, and present a 2.5 overall average. Students who do not qualify to enter this curriculum at the end of their sophomore year can transfer to the forest management, wildlife management, or wood industry curriculum without loss of time or credits, and should be able to obtain a B.S.F. in the normal four-year period.

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bot. 1—General	4	Chem. 15—General	4
English 1—Composition	3	English 2—Composition	3
For. 1—Profession	1	For. 4—Convocation	0
For. 3—Convocation	0	Math. 16—Calculus II	4
Math. 15—Calculus I	4	Mil. Sci. or A.S. 2	2
Mil. Sci. or A.S. 1	2	Phys. Ed. 2—General Program	1
Phys. Ed. 1—General Program	1	Zool. 2—Vertebrate	4
	15		18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bot. 67—Dendrology	4	Agron. 10—Forest Soils	3
C.E. 1—Surveying	2	Bot. 171—Plant Physiology	3
Chem. 16—General	4	For. 6—Convocation	0
For. 5—Convocation	0	For. 21—Mensuration	4
For. 11—Silvics	3	Mil. Sci. or A.S. 4	2
Mil. Sci. or A.S. 3	2	Electives	6
Electives	3		
	18		18

*Students not prepared to take Math. 15 must take Math. 3 and Math. 4 before enrolling in Math. 15.

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 133—Organic	3	For. 114—Forest Economics	3
Chem. 135	1	For. 136—Wood Processes and Products	3
Econ. 51—Principles	3	Physics 102—General	4
For. 112—Silvicultural Systems	3	Electives	8
Physics 11—General	4		
Electives	4		
	18		18

The summer between the junior and senior year must be spent working for a research center, or in taking 10 additional hours of classwork, or in Summer Camp.

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
For. 141—Wildlife Management	3	Statistics 212	3
Statistics 211	3	Electives	16
Electives	12		
	18		19

Courses of Instruction

1. **The Profession of Forestry.** I. 1 hr. (Required only for students who rank as freshmen in the Division of Forestry.) Survey of the profession of forestry and the opportunities available to foresters.

3, 4, 5, 6. **Forestry Convocation.** I and II. No credit. All students are expected to attend the weekly convocation. Attendance is required of students during their first four semesters in the Division of Forestry. Speakers and timely topics in forestry and allied fields are presented.

11. **Silvics.** I. 3 hr. PR or conc: Bot. 67. Forest and environment factors; site and type characteristics.

21. **Forest Mensuration.** II. 4 hr. PR: Math. 2, 4. Measurements of forest products, trees, and stands; timber estimating; introduction to growth and yield.

106. **Forest Surveying and Mensuration Field Practices.** S. 3 hr. PR: Bot. 67, C.E. 5, For. 21. The application of surveying and mensurational practice with emphasis on field problems.

107. **Forest Management, Utilization, and Wildlife Practices.** S. 3 hr. PR: For. 106. Study of forest management, utilization, and wildlife problems. Trip to observe forest management and utilization in the Southern Pine Region.

108. **Wood Utilization Practicum.** S. 6 hr. PR: For. 132. Program to acquaint students majoring in the Wood Industry curriculum with the technical aspects of wood products manufacture. Trip to observe wood industries in the Southern furniture producing region.

112. **Silvicultural Systems.** I. 3 hr. PR: For. 11. Principles of regeneration cuttings, intermediate cuttings, and cultural operations, with their application to forest stands.

113. **Seeding and Planting.** II. 3 hr. PR: For. 11. Seeding and planting nursery practice; phases of artificial regeneration.

114. **Principles of Forestry Economics.** II. 3 hr. PR: Econ 51 and 52 or equiv. The economics of production, distribution, and use for forest goods and services. Emphasis is on analytical methods and techniques in dealing with forest economic problems.

116. **Regional Silviculture.** I. 2 hr. PR: For. 11, PR or conc: For. 112. Major forest types of the United States; their composition, management, problems, and silvicultural treatment.

123. **Forest Management.** I. 4 hr. PR: Summer Camp, PR or conc: For. 112. The principles of sustained yield forest management. Organization of the forest area, selection of management objectives, application of silvicultural systems, and regulation of the cut. The forest management plan.

124. **Forest Finance.** II. 3 hr. PR or conc: For. 114. Cost and income items in producing and exploiting forest crops; appraisal of stumpage and damages.

125. **Forest Policy and Administration.** II. 3 hr. (Upperclassmen only). Forest policy in the United States; important federal and state laws; administration of public and private forests; problems in multiple-use forestry.

126. **Forest Measurement by Aerial Photographs.** II. 2 hr. PR: For. 21. Elements of photogrammetry; preparation of maps; interpretation of forest types and timber volumes from aerial photographs.

130. **Wood Technology.** I. 3 hr. PR: Bot. 67. For students other than those taking the Wood Industry or Wood Science option, designed to provide familiarity with the technical aspects of wood utilization.

131. **Wood Identification.** I. 3 hr. PR: Bot. 67. Identification of commercial timbers of U.S.; basic properities and uses of different woods.

132. **Properties of Wood.** I. 3 hr. PR: For. 131. Physical and mechanical properties of wood; testing, machining, gluing, finishing, and special processing of wood.

135. **Seasoning and Preservation.** II. 4 hr. PR: For. 131. Purposes, effects, and methods of seasoning and preserving wood.

136. **Wood Processes and Products.** II. 3 hr. PR: For. 21. The conversion of standing timber into primary and secondary products.

137. **Grading Wood Products.** II. 3 hr. PR: For. 21, 131. Inspection methods and application of standard grading rules to forest products, with emphasis on the inspection of hardwood and southern pine lumber.

140. **West Virginia's Natural Resources.** I, II. 3 hr. Survey of policies and practices in development and use of soil, water, forest, wildlife, mineral and human resources in West Virginia.

141. **Wildlife Management.** I. 3 hr. PR: Bot. 61 and Biol. 2 or Zool. 2. Basic principles of handling wildlife as a forest crop, including population dynamics, ecological relationships, social behavior, habitat manipulation, and game administration.

142. **Recreational Developments.** II. 2 hr. PR: C.E. 6, Summer Camp. Needs of the active and passive recreationist and means of supplying facilities for meeting these needs in public forests.

143. **The Forest Range.** II. 2 hr. PR: C.E. 5. Survey of basic range management techniques and practices on forest lands, with consideration of range mapping and important forage plants.

144. **Forest Zoology.** II. 3 hr. PR: Biol. 2 or Zool. 2. The relationship of mammals, reptiles, amphibians, and fish to the forest, with emphasis on the ecology and taxonomy of these groups.

145. **Life Histories of Game Animals.** II. 3 hr. PR: Biol. 2 or Zool. 2. Field and laboratory studies of game-bird and game-mammal life histories, with special reference to management of population of these species.

146. **Ornithology.** II. 2 hr. PR: Biol. 1, 2, or consent. Identification, distribution, and ecology of birds (particularly of forest lands).

151. **Forest Protection.** I. 2 hr. (Upperclassmen only). Preventative action, preparation activities, and control of forest fires.

170, 171, 172, 173. **Forestry Problems.** I, II. 1 hr. ea. For seniors only. (4 hr. max.).

183. **Farm Woods Management.** II. 3 hr. (Professional forestry students may not take this course for credit.) Characteristics of forest trees; management of farm woods for timber, wildfire, watershed protection, and recreation; measuring and marketing farm timber; plantation establishment.

213. **Forest Genetics and Tree Improvement.** I. 3 hr. PR: Genet. 171 or equiv., or consent. A study of forest genetic principles and their application to forest tree improvement including crossing methods, selection systems and other tree improvement techniques.

214. **Advanced Principles of Forestry Economics.** I. 3 hr. PR: Econ. 51 and 52 or equiv.; For. 114 or equiv. Intensive study of both micro- and macroeconomics of forestry.

217. **Forest Management Plans.** II. 2 hr. PR: For. 123. Analyses of forest management plans. Construction of a sustained yield timber management plan for a specific forest tract.

222. **Forest Mensuration.** II 3 hr. PR: For. 21. The measurement of growth and yield; statistical methods applied to forest measurement problems.

225. **Wood Finishing.** I. 3 hr. PR: For. 130, or consent. A technical course in wood finishing covering surface preparation, composition of finishing materials, equipment, techniques, defects, trouble-shooting, and quality control.

231. **Wood Microstructure.** I. 3 hr. PR: For. 131, Senior standing, or consent. A detailed examination of wood microstructure as it relates to processing, behavior, and identification.

232. **Mechanical Properties of Wood.** I. 3 hr. PR: T.A.M. 102. Properties and behavior of wood as a structural material.

236. **Advanced Wood Processes.** I. 3 hr. PR: For. 136, Senior standing, or consent. Detailed study of the materials and processes involved in the manufacture of secondary wood products, using wood furniture as the primary example.

241. **Wildlife Techniques.** II. 3 hr. PR: For. 141, 145, Bot. 161, or consent. Field and laboratory techniques necessary in the management and study of wildlife; collection of field data, mapping, censusing, habitat evaluation, literature and reports are stressed.

242. **Wildlife Population Ecology.** I. 3 hr. PR: For. 141, Statistics 211, or consent. Theory of population growth, population change, intraspecific and interspecific relationships that are involved in the natural regulation of populations, and the effects on man of populations of wild game.

The Appalachian Center

THE STAFF

Ernest J. Nesius, B.S.A., M.S.A., Ph.D., *Vice President, West Virginia Center for Appalachian Studies and Development; Director, Cooperative Extension Service; Professor of Agricultural Economics* (1963), 1960.
Carl D. Ekstrom, A.B., M.P.A., *Program Development and Special Affairs Officer* (1966), 1965.

Office of Research and Development

Robert G. Dyck, A.B., B.Arch., M.C.P., *Acting Director, Office of Research and Development; Assistant Professor of Planning* (1963).
Samuel M. Brock, B.S., M.F., Ph.D., *Assistant Professor of Forest Economics* (1965).
Chester L. Dodson, B.S., M.S., *Director, Water Research Institute* (1965), 1950.
Alan S. Komins, M.P.A., *Research Assistant, Public Administration* (1966).
Helen R. MacKenzie, B.A., *Research Associate* (1966).
Harold P. Marshall, B.S., M.S., *Research Assistant, Planning* (1966).
H. Milton Patton, B.A., M.C.P., *Assistant Research Professor, Regional Planning* (1964).
John D. Photiadis. B.S., M.S., Ph.D., *Associate Research Professor, Sociology* (1965).

Cooperative Extension Service

Roman J. Verhaalen, B.A., M.A., Ph.D,. *Dean of Extension Services; Associate Director, Cooperative Extension Service; Professor of Education* (1964).
B. L. Coffindaffer, B.S., M.S., Ph.D., *Dean, West Virginia University Parkersburg Center; Area Director, Parkersburg Area Appalachian Center* (1966), 1950.
Mildred Fizer, A.B., M.S., *Instructor; State Chairman—4-H and Youth Development Programs* (1966), 1953.
Edsel Gainer, B.S., M.S., *Area Director, Weston Area Appalachian Center* (1964), 1961.
Eleanor M. Glenn, B.S.H.E., *State Extension Program Leader—Home Demonstration* (1961), 1926.
Virginia R. Griffin, B.S., M.A., Ph.D., *State Chairman—Extension Education Programs for Women* (1965).
Oscar C. Hutchison, Jr., B.S., M.S., *Instructor; Area Director, Beckley Area Appalachian Center* (1967), 1961.
Bruce M. John, B.S., M.S., *Area Director, Charleston Area Appalachian Center* (1966), 1963.
Claude R. Kemper, B.S.Agr., M.S.Agr., *Assistant Director, Programs Audit* (1966), 1946.
Wesley Lynch, B.S., M.S., *Instructor; State Extension Project Leader—Resource Development* (1967), 1949.
Joseph L. Morris, B.S., M.S.Agr., *Assistant Professor; Area Director, Morgantown Area Appalachian Center* (1967), 1954.
Galen S. Myers, B.S., M.S., *State Chairman—Community Resource Development* (1965), 1935.
David O. Quinn, A.B., M.S., *State Extension Program Leader—Safe Use of Pesticides and Chemicals* (1966), 1953.
Ronald L. Stump, M.S., *Assistant Professor; Assistant Director and State Chairman—Food and Rural Affairs* (1967), 1948.
James C. Summers, B.S., M.B.A., *Assistant to the Vice President, and Director, Office of Business Relations and Records* (1965).
Franz I. Taylor, M.S., *Area Director, Keyser Area Appalachian Center* (1966), 1941.
Leighton G. Watson, A.B., *Head, Office of Communications and Visual Aids, and State Extension Editor* (1963), 1938.

PROGRAM SERVICES

Joseph G. Barrat, B.S., M.S., Ph.D., *State Extension Specialist—Plant Pathology, West Virginia University Experiment Farm* (1958).
Waldo E. Bell, B.S.Agr.Eng'g., *State Extension Specialist—Agricultural Engineering* (1945).
H. Philip Berthy, B.S.F., M.S., *State Extension Specialist—Wood Utilization* (1963), 1950.
C. Franklin Bishop, B.A., M.S., Ph.D., *State Extension Specialist—Plant Pathology and Entomology* (1966), 1964.
Francis L. Blake, B.S.J., M.S.J., *State Extension Editor—Radio-Television,* (1964), 1962.
Joanne W. Bowie, A.B., M.S., *State Extension Editor—4-H and Home Economics* (1959).
George H. Breiding, B.S., *State Extension Program Leader—Outdoor Recreation* (1963), 1950.
Clifford W. Collier, Jr., B.F.A., M.L.A., *State Extension Specialist—Landscape Architecture* (1960).
David R. Creel, *Photographer* (1947)
Harley V. Cutlip, A.B., M.S., *State Extension Program Leader—4-H; and Camp Director, State 4-H Camp* (1955), 1943.
M. Hilda Dailey, B.S., M.S., *State Extension Specialist—Home Management* (1963).
Anne R. Dauenheimer, A.B., *Extension Staff Training Assistant* (1964).
Joseph C. Emch, B.S., M.S., *State Extension Specialist—Animal Husbandry* (1953), 1947.
Joseph L. Fasching, B.S.J., *State Extension Editor—News* (1962).
Richard C. Franklin, B.A., M.A., *Training Coordinator, Extension Services* (1966).
Eleanor M. Glenn, B.S.H.E., *State Extension Leader—Home Demonstration* (1961), 1926.
James T. Guill, B.S., M.S., *State Extension Specialist—Animal Husbandry* (1966).
Betty A. Gum, B.S.Agr., B.S.Ed., M.A., *State Extension Editor—Project Development* (1963), 1947.
N. Carl Hardin, Jr., B.S., M.S., *State Extension Specialist—Horticulture* (1960), 1958.
Ted R. Hash, B.S., *State Extension Specialist—Poultry* (1947), 1937.
Ruth K. Jones, B.S., M.S., *State Extension Specialist—Clothing* (1946), 1941.
Robert O. Kelley, B.S., B.S.Agr., M.A., Ph.D., *State Extension Specialist—Dairy* (1966).
William E. Kidd, Jr., B.S.F., M.S., *State Extension Specialist—Forest Management* (1965).
Tanner J. Livisay, B.S., M.S., *State Extension Specialist—Child Development and Human Relations* (1963), 1942.
Reita J. Marks, A.B., M.Ed., *State Extension Program Leader—4-H and Youth Development* (1965).
Elmo W. Miller, B.S., M.S.Agr., *State Extension Program Leader—Rural Civil Defense* (1963), 1954.
Byron W. Moore, B.S.Agr., M.S., *State Extension Specialist—Poultry* (1962), 1947.
Foster G. Mullenax, B.S.Agr., *State Extension Editor—Radio-Television* (1963), 1950.
Clifford D. Porter, B.S., M.S., Ph.D., *State Extension Specialist—Agronomy* (1966).
Arthur W. Selders, B.S.Agr., M.S.Agr.Eng'g., *State Extension Specialist—Agricultural Engineering* (1963).
Sylvia C. Shapiro, B.S., M.Ed., *State Extension Program Leader—Home Demonstration* (1966).
George Sharpe, B.S.Agr., M.S., *State Extension Specialist—Soil Conservation* (1944), 1929.
Glenn Snyder, Jr., B.S., *Instructor; State Extension Program Leader—4-H and Youth Development* (1967), 1957.
Benjamin W. Wamsley, Jr., B.S., M.S., *State Extension Specialist—Animal Husbandry* (1957), 1948.

COUNTY EXTENSION WORKERS

Barbour County

George C. Mouser, B.S., M.S., *County Extension Agent* (1963); John L. Loyd, B.S., M.S., *County Extension Agent—4-H* (1956); Rella L. Butcher, B.S.H.E., *County Extension Agent—Home Demonstration* (1942).

Berkeley County

Arlan R. Brannon, M.S., *County Extension Agent* (1966), 1954; Eugene J. Harner, B.S., M.S., *County Extension Agent—Agriculture* (1954); Velma B. Johnson, B.S.H.E., *County Extension Agent—Home Demonstration* (1935).

Boone County

A. Dennis McCutcheon, B.S., M.S., *County Extension Agent* (1965), 1961.

Braxton County

Charles W. Clayton, B.S., M.S., *County Extension Agent* (1966); Ruby L. Holland, B.S.H.E., M.S.H.E., *County Extension Agent—Home Demonstration* (1965).

Brooke County

Emma L. Noe, B.S.H.E., M.S., *County Extension Agent—Home Demonstration* (1956).

Cabell County

Betty P. Crickard, B.S., M.E., *County Extension Agent—Home Demonstration* (1964), 1951; Violet R. Brandon, A.B., *County Extension Agent—4-H* (1954), 1942.

Calhoun County

Voras K. Haynes, B.S.Agr., *County Extension Agent* (1962).

Clay County

Paul A. Allen, B.S., M.S., *County Extension Agent* (1954), 1951; Margie Louise Crawford, B.S., *County Extension Agent—4-H* (1959).

Doddridge County

Henry A. Roush, B.S., M.S., *County Extension Agent* (1966), 1958; Betty J. Ralston, B.S.H.E., M.S.H.E., *County Extension Agent—Home Demonstration* (1963), 1958.

Fayette County

George D. Siehl, B.S., M.S., *County Extension Agent* (1965), 1954; Beatrice F. Whanger, B.S.H.E., *County Extension Agent—Home Demonstration* (1959), 1930; Ethel H. Banks, B.S., *County Extension Agent—Home Demonstration* (1951).

Gilmer County

Freda Burke, A.B., *County Extension Agent—4-H* (1950).

Grant County

Emery L. Prunty, B.S.A.H., M.S., *County Extension Agent* (1966), 1962.

Greenbrier County

James M. Van Metre, B.S., M.S., *County Extension Agent* (1958), 1954; Vivian M. Richardson, B.S.H.E., *County Extension Agent—Home Demonstration* (1956), 1934; James E. Johnson, B.S., *County Extension Agent—4-H* (1948); Hilda G. Scott, B.S., *County Extension Agent—4-H* (1964). (On study leave).

Hampshire County

S. Porter Smith, B.S., M.S., *County Extension Agent* (1950), 1949; Maxine R. Strother, B.S.H.E., M.S., *County Extension Agent—Home Demonstration* (1940).

HANCOCK COUNTY

Oliver W. Johnson, B.S., *County Extension Agent* (1935).

HARDY COUNTY

William L. Clark, B.S., M.S., *County Extension Agent* (1953), 1951; Annie H. Shobe, A.B., *County Extension Agent—Home Demonstration* (1954), 1932; Howard B. Hardy, B.S., M.S., *County Extension Agent—4-H* (1959).

HARRISON COUNTY

Vernon A. Tacy, B.S.Agr., *County Extension Agent* (1956), 1955; B. Stephen Smith, B.S.Agr., *County Extension Agent—Agriculture* (1966); John William Clark, B.S., *County Extension Agent—4-H* (1958); Mary Rachel Bussard, A.B., *County Extension Agent—4-H* (1965); Donis R. Hannah, B.S., *County Extension Agent —Home Demonstration* (1965).

JACKSON COUNTY

Norman K. Speicher, B.S., *County Extension Agent* (1943); Shirley R. Campbell, A.B., *County Extension Agent—Home Demonstration* (1964); Lowell R. Shaw, B.S., *County Extension Agent—4-H* (1964). (On study leave); Barbara L. Malone, B.S., *County Extension Agent—4-H* (1967).

JEFFERSON COUNTY

J. E. Saville, B.A., M.S., *County Extension Agent* (1947), 1942; Marian E. Myers, B.S., *County Extension Agent—4-H* (1954); Victoria G. Goens, A.B., *County Extension Agent—4-H* (Berkeley, Jefferson, Morgan) (1944).

KANAWHA COUNTY

Brooks Daugherty, B.S.Agr., *County Extension Agent* (1935); Camille C. Stewart, A.B., *County Extension Agent—Home Demonstration* (1963), 1950; Jacqueline Hunt Maxwell, A.B., M.A., *County Extension Agent—4-H* (1948); Charles B. Maxwell, A.B., *County Extension Agent—4-H* (1948).

LEWIS COUNTY

Lynn Spiker, B.S., *County Extension Agent* (1938); Caroline W. Schnably, B.S.H.E., M.S., *County Extension Agent—Home Demonstration* (1954), 1952; Rosalie Underwood, A.B., *County Extension Agent—4-H* (1965).

LINCOLN COUNTY

John M. Curry, B.S., M.S., *County Extension Agent* (1958), 1937; Wylene P. Dial, A.B., *County Extension Agent—4-H* (1957).

LOGAN COUNTY

Voras K. Haynes, B.S., *County Extension Agent* (1962).

MCDOWELL COUNTY

Eugene H. Mitchell, B.S., M.S., *County Extension Agent—4-H* (1965), 1949; Billie J. Hairston, B.S., *County Extension Agent—Home Demonstration* (1954).

MARION COUNTY

Dayton J. Michael, B.S.Agr., M.S.Agr., *County Extension Agent* (1963); Fairy A. Downs, A.B., M.A., *County Extension Agent—4-H* (1958) (Study leave); Janie V. Carter, A.B., *County Extension Agent—4-H* (1963), 1957; Geraldine Belmear, B.S., M.S., *County Extension Agent—Home Demonstration* (1962), 1949.

MARSHALL COUNTY

Donald A. Hutchison, B.S., M.S., *County Extension Agent* (1950), 1949; Rebecca S. Riggs, B.S.H.E., *County Extension Agent—Home Demonstration* (1964); Halley J. Hubbs, A.B., *County Extension Agent—4-H* (1945).

MASON COUNTY

Carl H. Cook, B.S.Agr., M.S., *County Extension Agent* (1962); Gilbert V. Barnette, B.S., *County Extension Agent—4-H* (1957); E. Louise Long, B.S., *County Extension Agent—Home Demonstration* (1966).

MERCER COUNTY

Richard E. Harbert, B.S., *County Extension Agent* (1947); Margaret M. Meador, B.S., *County Extension Agent—Home Demonstration* (1964), 1963; Mary C. Reed, B.S., *County Extension Agent—Home Demonstration* (Mercer, Wyoming) (1959).

MINERAL COUNTY

Betty J. Wagoner, B.S.H.E., *County Extension Agent—Home Demonstration* (1959).

MINGO COUNTY

Richard H. Cutlip, B.S., *County Extension Agent* (1959).

MONONGALIA COUNTY

Burkey, Lilly, B.S., M.S., *County Extension Agent* (1958), 1954; Carol M. Cecil, A.B., *County Extension Agent—Home Demonstration* (1962); Loretta Florence, B.S.H.E., *County Extension Agent—4-H* (1966).

MONROE COUNTY

Raymond E. Spencer, B.S., M.S., *County Extension Agent* (1949), 1947; Eleanor J. Shanklin, B.A., B.S., *County Extension Agent—Home Demonstration* (1952).

MORGAN COUNTY

Beverly Annette Shipe, B.S.H.E., *West Virginia University Extension Agent* (1965), 1963. (On study leave).

NICHOLAS COUNTY

Norman L. Rexrode, B.S., M.S., *County Extension Agent* (1957), 1955; Helen F. Cole, B.S., M.S., *County Extension Agent—Home Demonstration* (1946); B. Rush Butcher, B.S., M.S., *County Extension Agent—4-H* (1951).

OHIO COUNTY

Mary D. Conrad, B.S., *County Extension Agent—Home Demonstration* (1962), 1936; E. Susan Sharpe, B.S.H.E., M.S., *County Extension Agent—4-H* (1966), 1963.

PENDLETON COUNTY

John W. Hammer, Sr., B.S., M.S., *County Extension Agent* (1946), 1940; Harriet W. McCoy, B.S., *County Extension Agent—Home Demonstration* (1954).

POCAHONTAS COUNTY

Walter E. Jett, B.S., *County Extension Agent* (1942), 1941; Betty R. Weiford, A.B., M.S., *County Extension Agent—Home Demonstration* (1952).

PRESTON COUNTY

Alton J. Anderson, B.S.Agr., M.A.Agr., *County Extension Agent* (1953); Clifford K. Bucklew, B.S., *County Extension Agent—4-H* (1957); Mildred Thornton Lindley, B.S., *County Extension Agent—Home Demonstration* (1964).

PUTNAM COUNTY

William P. Johnston, B.S., *County Extension Agent* (1950), 1949; L. Evangeline Hedrick, B.S., M.S., *County Extension Agent—4-H* (1953); Charlotte R. Critchfield, B.S., *County Extension Agent—Home Demonstration* (1965).

RALEIGH COUNTY

Lawrence S. Cavendish, B.S., M.S., *County Extension Agent* (1966), 1964; Mary N. Godbey, B.S.H.E., *County Extension Agent—Home Demonstration* (1963); William G. Clark, B.S., M.S., *County Extension Agent—4-H* (1958); Lula Beatrice Rogers, B.S., *County Extension Agent—Youth Development* (1965).

RANDOLPH COUNTY

Robert L. Hammer, B.S., *County Extension Agent* (1938), 1937; Alice T. Torner, A.B., *County Extension Agent—Home Demonstration* (1944); Charles E. Williams, B.A., *County Extension Agent—4-H* (1963).

Ritchie County

Ferman C. Rice, *County Extension Agent* (1944); Janet Lee Wetzel, A.B.Ed., *County Extension Agent—Home Demonstration* (1965).

Roane County

Neil G. Hedrick, B.S., M.S., *County Extension Agent* (1957); Ora A. Drake, B.S., *County Extension Agent—Home Demonstration* (1959); Lyndall L. Jones, A.B., *County Extension Agent—4-H* (1965).

Summers County

Robert M. Baber, B.S.Agr., *County Extension Agent* (1961), 1959; Elizabeth R. Bare, B.S.H.E., M.S., *County Extension Agent—4-H* (1965), 1953.

Taylor County

Woodbridge Stout, B.S., M.S., *County Extension Agent* (1954), 1951; Helen H. Fleming, B.S.H.E., M.S.H.E., *County Extension Agent—Home Demonstration* (1954), 1952.

Tucker County

Ralph H. Dunkle, B.S., *County Extension Agent* (1962), 1959.

Tyler County

James C. Stiles, B.S., M.S., *County Extension Agent* (1962), 1958; Ann J. Thomas, A.B., *County Extension Agent—Home Demonstration* (1958).

Upshur County

Judith M. Knorr, B.S.H.E., *County Extension Agent—Home Demonstration* (1966); Ancil B. Cutlip, B.S., M.S., *County Extension Agent—4-H* (1961), 1958.

Wayne County

Cyrus Crum, B.S., M.S., *County Extension Agent* (1952); Betty N. Smith, A.A., A.B., *County Extension Agent—4-H* (1961).

Webster County

Harley A. Burton, B.S.Agr., *County Extension Agent* (1931); Thelma R. Pickens, *County Extension Agent—4-H* (1940).

Wetzel County

Velinda K. Phillips, A.B., *County Extension Agent—Home Demonstration* (1965).

Wirt County

William Kemper, B.S., M.S., *County Extension Agent* (1966).

Wood County

Howard A. Shriver, B.S., M.S., *County Extension Agent* (1962), 1958 (On study leave); Jerry L. Lease, B.S.Agr., *County Extension Agent* (1966); Martha Kate Clark, B.S.H.E., *County Extension Agent—Home Demonstratiin* (1961), 1957; Frances N. Smith, B.S.H.E., *County Extension Agent—4-H* (1966).

Wyoming County

Roscoe Plumley, B.S.Agr., M.S., *County Extension Agent* (1960); Victor H. Gilkeson, Jr., A.B., M.A., *County Extension Agent—4-H* (McDowell, Wyoming) (1964).

AREA EXTENSION SPECIALISTS

Beckley Area Appalachian Center

Roger S. Karsk, B.A., M.S., *Area Extension Specialist—Resource Development* (1966).

Charleston Area Appalachian Center

Julia H. Lowery, B.S., *West Virginia University Extension Agent* (1964), 1963.
Wendell G. Marston, B.S., M.S., *Area Extension Specialist—Resource Development* (1966).

Mary B. Pullen, B.S., M.S., *West Virginia University Extension Agent* (1964), 1963.
Thomas E. Woodall, B.A., *West Virginia University Extension Agent* (1966).

KEYSER AREA APPALACHIAN CENTER

Norvin L. Bowyer, B.S., M.S., *Area Extension Specialist—Outdoor Recreation—Community and Public Affairs* (1965), 1954.
Anthony Ferrise, B.S., M.S., *Area Extension Specialist—Resource Development* (1965).
William N. Grafton, B.S.F., M.S.F., *Area Extension Specialist—Forestry* (1966).
Edward L. Riley, B.S., *County Extension Agent—4-H* (1966).

WESTON AREA APPALACHIAN CENTER

Daniel W. Bousquet, B.S., M.S., *Area Extension Specialist—Wood Utilization* (1966).
Joseph Neil Yeager, B.S., *Area Extension Specialist—Forestry* (1964), 1960.
John R. Schabinger, B.S., M.S., Ph.D., *Area Extension Specialist—Dairy* (1964).

UNIVERSITY EXTENSION AND CONTINUING EDUCATION

Roman J. Verhaalen, B.A., M.A., Ph.D., *Dean of Extension Services; Associate Director, Cooperative Extension Service; Professor of Education* (1964).
Keith E. Glancy, B.S., M.S., Ph.D., *State Chairman, Continuing Education and Extended Credit Programs; Associate Professor of Education* (1965).
Robert B. Conner, B.S., M.B.A., *Conference Coordinator* (1965).
Seigle W. Cox, B.S., M.S., *Civil Defense Education Instructor* (1966).
Carl P. Cummings, A.B., M.A., *Assistant Professor of Mathematics* (1964).
Carl M. Frasure, Jr., B.S., M.A., M.S., *Associate Program Leader, Extension Services and Instructor* (1966).
Elizabeth J. Goodall, A.B., M.A., *Associate Professor of History* (1945).
A. Lynn Keyser, A.B., *Instructor, Shelter Management* (1963).
Stanley H. Livingston, A.B., *Office of Civil Defense, Field Supervisor* (1963).
Francis H. McClung, B.S., M.S., *Assistant Professor of Education* (1956).
Ernie B. McCue, A.B., M.A., *Coordinator, C.D.A.E., and Instructor* (1965), 1937.
George V. Podelco, A.A., A.B., Ph.D., *Public Administration Specialist* (1966).
Edward A. Sprague, B.S., M.S., *Associate Professor of Music, Director of Music Education* (1964), 1962.
Charles D. Thomas, Jr., A.B., M.S., Ph.D., *Instructor, Radiological Monitoring, Civil Defense* (1965).
Larry G. Tracewell, *Field Representative, Civil Defense* (1966).

INSTITUTE FOR LABOR STUDIES

Frederick A. Zeller, B.S.C., M.A., Ph.D., *Director, Institute for Labor Studies; Associate Professor of Economics* (1965).
Jerome Breslaw, A.B., *Labor Education Specialist and Project Consultant* (1966).
Frank L. Collins, A.B., M.A., *Labor Education Specialist; Assistant Professor of Labor Studies* (1964).
John R. MacKenzie, B.A., *Assistant Director, Institute for Labor Studies, Project Consultant; Professor of Labor Studies* (1966), 1964.
Robert W. Miller, A.B., M.A., Ph.D., *Assistant Director, Institute for Labor Studies; Visiting Associate Professor of Psychology* (1965).
Robert T. Wollk, B.A., *Assistant Professor, Institute for Labor Studies* (1967).

INTERNATIONAL PROGRAMS

Ralph E. Nelson, B.S., M.S., Ph.D., *Director and Campus Coordinator* (1965), 1964.
Hugh E. Cameron, B.S., M.S., *Editor* (1965).

KENYA (*East Africa*)

Robert H. Maxwell, B.S., M.S., *Chief of Party and Assistant Professor, Agricultural Education* (1966), 1964.
Joseph H. Robertson, B.A., M.S., Ph.D., *Chief of Party and Lecturer in Range Management* (1965).

Vance Q. Alvis, B.S., M.A., Ph.D., *Project Leader and Professor of Economics* (1960), 1956.
Lenrod L. Blowe, B.S., *Instructor in Agricultural Education* (1964).
Robert H. Burns, B.S., *Instructor in Agricultural Education* (1964).
Edmond B. Collins, B.S.Ag.E., M.S.Ag.E., *Assistant Professor of Agricultural Engineering* (1962), 1960.
Albert E. Grafton, B.S.F., M.S., *Instructor in Forestry* (1965), 1963.
Chandler V. Jenson, B.S., *Range Management Specialist* (1965).
Thomas O. Kajer, B.S., M.S., *Instructor in Agricultural Education* (1965).
William I. Lindley, B.S., M.S., *Instructor in Vocational Agriculture* (1966).
J. M. Reid, B.S., *Instructor in Agricultural Education* (1964).
Gerald E. Thierstein, B.S., M.S., *Assistant Professor of Agricultural Engineering* (1962).
John L. Wagner, B.S., M.S., *Assistant Professor of Agricultural Engineering* (1965).

TANZANIA (*East Africa*)

Paul V. Armbrester, B.S., M.S., *Chief of Party, Assistant Professor of Agricultural Education* (1966), 1963.
Royal K. Kelley, B.S., M.S., *Chief of Party* (1965).
Amir A. Badiei, B.S., M.S., Ph.D., *Assistant Professor of Biology* (1965).
Chester A. Cromer, B.S.Ag.E., M.S.Ag.E., *Assistant Professor of Agricultural Engineering* (1964).
Wilbur D. Dye, B.S., M.S., *Instructor in Animal Husbandry and Zoology* (1964), 1957.
Henry W. Hurlbutt, B.A., M.S., Ph.D., *Assistant Professor of Biology* (1963).

UGANDA (*East Africa*)

Victor Amann, B.S., Ph.D., *Chief of Party and Assistant Professor of Agricultural Economics* (1966).
Newton M. Baughman, B.S., M.S., Ph.D., *Senior Agricultural Educator and Professor of Agronomy* (1965), 1949.
William B. Easley, B.S., M.S., *Instructor in Vocational Agriculture* (1966).
Jack M. Gay, B.S., M.S., *Instructor in Animal Industry and Veterinary Science* (1964).
Robert L. Gay, B.S., D.V.M., *Assistant Professor of Animal Husbandry and Animal Husbandry Adviser* (1964).
Frederick P. Holmes, B.S., M.S., *Instructor in Agricultural Education* (1964).
Calvin C. Merinar, B.S., M.S., *Instructor in Dairy Husbandry* (1965), 1961.
Coy Moore, B.S., M.S., *Instructor in Animal Husbandry* (1966).
Bennie A. Perry, B.S., M.S., *Lecturer in Agronomy* (1965).
Charles B. Sperow, Jr., B.S., M.S., *Associate Professor of Agronomy* (1967), 1952.
Siegbert A. Thies, B.S., M.S., *Assistant Professor of Agronomy* (1966), 1964.
Willem A. van Eck, B.S., M.S., Ph.D., *Associate Professor of Agronomy* (1966), 1957.
Frank E. Woodson, B.S., D.V.M., *Assistant Professor of Animal Industry and Veterinary Science* (1963).

Kanawha Valley Graduate Center

Bruce M. John, B.S., *Director, Kanawha Valley Graduate Center; Director—Charleston Area Appalachian Center; Instructor in Sociology* (1966), 1963.

Mining and Industrial Extension Service

Charles T. Holland, B.S.E.M., M.S.E.M., *Director, Mining and Industrial Extension Service; Dean, School of Mines; Professor of Mining Engineering* (1961), 1930.
Roscoe E. Hanna, Jr., B.S., *Supervisor and Assistant Director, Industrial and Extension Fire Service* (1949), 1944.
Ralph C. Vierer, *Instructor, Mining Extension* (1952).
Leslie E. Bradley, A.B., *Instructor, Mining Extension* (1945).
Ulysses G. Carter, B.S., *Instructor, Mining Extension* (1957).
Luther B. Ferguson, *Instructor, Mining Extension* (1957).

William L. Miles, B.S., *Instructor, Fire Control Technology* (1966).
Peter C. Mintreas, B.S., *Instructor, Mining Extension* (1961).
James M. Morrison, *Instructor, Mining Extension* (1958).
George H. Pudlo, B.S.E.M., *Instructor in Mining and Industrial Extension Service* (1964).
Leland H. Winger, B.S.E.E., *Instructor in Mining Extension* (1952).

West Virginia University Parkersburg Center

B. L. Coffindaffer, B.S., M.S., Ph.D., *Dean, West Virginia University Parkersburg Center; Director, Area Appalachian Center* (1966), 1964.
Bernard L. Allen, B.S., M.A., *Instructor in Philosophy* (1966).
Maurice G. Powell, B.S., M.S., Ph.D., *Chairman, Faculty and Programs, and Associate Professor of Chemistry* (1962).
Ronnie E. Atkinson, A.B., M.A., *Instructor in Political Science* (1965).
Harry D. Bingman, A.B., M.A., *Instructor in Biology* (1965).
Nathan L. Breed, Jr., B.A., M.A., *Chairman, Technical Programs; Instructor in Chemistry* (1966).
Bonnie B. Cundiff, B.S.H.E., M.S., *Instructor in Speech and Journalism* (1966).
Gilford Frazee, A.B., M.S., *Associate Professor of Commerce* (1966).
Kendall L. Hall, B.S.Ch.E., *Instructor in Engineering* (1966).
Thomas J. Hillyard, B.S., M.A., *Instructor in Psychology* (1966).
Catherine W. Lewis, B.A., *Instructor in Art* (1966), 1963.
Harold W. Metz, A.B., M.Ed., *Chairman, Student Education Service* (1966), 1964.
Jane E. Miller, B.A., M.A., *Instructor in English* (1966).
Henry M. Nelson, B.S., M.A., *Instructor in Spanish* (1966).
John O. Roach, II, A.B., M.A., *Instructor in History* (1964).
Arlan L. Ropp, B.A., M.A., *Instructor in English and Speech* (1965).
A. Gayle Schmidt, M.A., *Director of Development Programs; Instructor in English* (1966).
Robert H. Stauffer, B.S., M.S., D.Ed., *Chairman of Extension Personnel and Programs* (1966).
David C. Tenney, A.B., *Instructor in Physics* (1964), 1962.
Lloyd C. Torrence, B.S., M.A., *Instructor in Mathematics* (1966).

General Information

The West Virginia Center for Appalachian Studies and Development was established in 1963.

This intra-University organization, called Appalachian Center, was established to identify, regroup, and to set into coordinated purposeful action those major activities which relate the University to the State and to the Appalachian region. The Appalachian Center concept embodies a realignment and concentration of those University functions which are oriented toward direct public service. It mobilizes into one coordinated effort all special public service skills—extension, consulting, research, and planning—so as to bring them to bear on meeting the public needs of the present and for defining goals for the future.

It aims to be a vital force in the destiny of West Virginia. The University plans to exercise every possible effort to project knowledge into life's daily experiences. The points of focus will be the people's attitudes, the human and natural resources, the capital base, and international affairs.

Its objectives are: to help to determine the key issues, problems, and opportunities basic to West Virginia's future; to provide maximum encouragement to the economic, social, cultural, and political development of West Virginia through discovery and dissemination of knowledge using inter-disciplinary task forces and competent resources; to be a vehicle for generating continuous Statewide planning, goal setting, and intensive discussion; to organize and encourage continuing life-long education as essential to life's experiences; identify leaders, equip them intellectually, impart skills, and keep them competent; to encourage development of various arrangements within the University in order that academic and public concerns go hand-in-hand; to insure the concerted and unified participation of those divisions of

West Virginia University which are directly concerned with the relationships between University and State; to involve and support State educational institutions, State and federal agencies, and community organizations in unified development programs; to serve as a rallying point for gathering, indexing, and focusing knowledge for the Appalachian region; to assist young people through youth development programs to realize their potential competency; and to accept a true University responsibility to further education in international affairs.

The program units of the Appalachian Center include the Office of Research and Development; the Cooperative Extension Service; University Extension and Continuing Education; Institute for Labor Studies; Mining and Industrial Extension, International Programs, West Virginia University Parkersburg Center, and the Kanawha Valley Graduate Center.

OFFICE OF RESEARCH AND DEVELOPMENT

The Office of Research and Development is responsible for the initiation and production of research which furnishes information useful toward improvement of the economy and life in West Virginia and the Appalachian Highlands. It has special responsibilities for the University in interdisciplinary applied research and applied research requested by communities and by departments of State government or which is jointly developed with them. It also serves as a source of current information in fields of industrial, natural, and human resources. Current studies are concerned with education requirements, forest product potentials, State and community development planning, travel and recreation services, development of computer-based economic and sociological data banks, highway protection and development, the legal and policy framework in the use of natural resources, and the growth points for economic development. The Office has recently organized the Water Research Institute which has been designated by the Governor for funding under the Water Resources Research Act of 1964.

INSTITUTE FOR LABOR STUDIES

The Institute for Labor Studies, established in September, 1964, features a specialized program of labor education and studies within the University's organizational structure commensurate with its needs and importance. The Institute conducts off-campus educational programs for the worker and his union, related research, and musters the full facilities of the University to help meet the educational and informational needs of an ever-developing urban-industrial society. The University started a program in labor education in 1959.

OFFICE OF THE DEAN OF EXTENSION SERVICES

The various extension services of the University are coordinated by a Dean of the Extension Services. That office is responsible for the Cooperative Extension Service, University Extension and Continuing Education, Mining and Industrial Extension, Continuing Business Education, Continuing Legal Education, and other extension services.

COOPERATIVE EXTENSION SERVICE

The Cooperative Extension Service functions within the framework of the Appalachian Center and within the official agreement between the University and the United States Department of Agriculture, the eight approved project agreements between the Director of the Cooperative Extension Service and the Federal Extension Service, USDA, and the legal authority established by West Virginia. It assumes responsibility for Appalachian Center extension programs of informal education as related to youth development, agriculture production and marketing, consumer education, family-oriented projects, community improvement, resource development and conservation, public affairs, rural and urban county extension programs (through the area Appalachian centers), and coordination of specialist programming in field activities.

UNIVERSITY EXTENSION AND CONTINUING EDUCATION

The program unit is responsible for extension courses of instruction for credit and non-credit, for Appalachian Center conferences, seminars, symposia, and certain specialized training courses.

The work given in extension courses corresponds in every particular to that given in the same courses on campus. Students taking extension courses for credit must satisfy all requirements for admission to the University and, before registering, must file with the Registrar of the University complete official transcripts of record.

The *maximum undergraduate credit* that may be counted toward any degree for extension work conducted by the University is 48 semester hours. The *maximum undergraduate credit* that may be counted toward a degree for extension work taken in other institutions is 30 semester hours. No more than 15 hours of work taken in *graduate extension courses* may be counted toward any degree, and of these only 8 semester hours may be in one field. Education majors are limited to 15 semester hours that may be counted toward the completion of the Master's degree. No more than 8 of these hours can be taken in extension prior to earning 6 hours in Education in *residence* in the University. For other regulations on graduate extension for Education majors see the College of Human Resources and Education section of this bulletin and the current Graduate School *Announcements*.

No University extension courses may be offered without the approval of the State Chairman of Continuing Education and Extended Credit Programs. Library and laboratory facilities for each course must be approved by the State Chairman and, in case of courses for graduate credit, by the Dean of the Graduate School. Reference books for the use of extension students may be borrowed from the University Library upon the order of the State Chairman of Continuing Education and Extended Credit Programs, subject to the approval of the Library Committee. Postal changes must be paid by the individual or groups for whom the books are borrowed.

A fee of $12.00 per semester hour and a $12.00 off-campus enrollment fee are charged for each extension course offered.

For further information write to the State Chairman of Continuing Education and Extended Credit Programs, West Virginia University, Morgantown, West Virginia 26506.

The University Extension and Continuing Education Division offers thirteen reading courses through correspondence. While these courses are offered in cooperation with the West Virginia Federation of Women's Clubs, any adult may enroll for any of these courses by applying to the State Chairman of Continuing Education and Extended Credit Programs. The fee is $1.00 per course. The reader sends in short reports on the books he reads in each course. When the course has been satisfactorily completed, a progress card from the West Virginia University Appalachian Center is awarded. These courses carry no University credit but are designed to provide adults with some of the best reading materials in the areas covered through this program.

The courses include (1) World Affairs; (2) Modern America; (3) Psychology for Everyday Living; (4) Happy Family Relationships; (5) Novel and Biography; (6) Ideas in Conflict; (7) The Home Beautiful; (8) Design for Outdoor Living; (9) Leadership; (10) So You've Been Elected; (11) Science and the Modern Man; (12) Something About Art; and (13) West Virginia.

MINING AND INDUSTRIAL EXTENSION

This program unit is responsible for leadership and development of industrial education; it conducts technical education and special training programs in order to promote safety, efficiency, and conservation of natural resources in the coal mining industry of West Virginia.

INTERNATIONAL PROGRAMS

This program unit is responsible for the cooperative programs with the U.S. Agency for International Development; for inter-nation education contracts and agreements; and for administering and developing the overseas commitments of West Virginia University as they occur. It also leads in developing a favorable climate for public concern with affairs of international importance.

WEST VIRGINIA UNIVERSITY PARKERSBURG CENTER

The Parkersburg Center is a fully integrated component of West Virginia University. Development and administration is done through the Appalachian Center. Its program, always to be kept on a par with West Virginia University's standards, is the responsibility of the academic leadership as designated by the President of the University.

The Parkersburg Center maintains close liaison with the Parkersburg College Fund, a non-profit corporation, which was established in 1961 to coordinate voluntary financial support of the Center. The members of the fund are Parkersburg area professional and business leaders.

The Center program consists of the freshman and sophomore years of the West Virginia University baccalaureate degree program, a two-year technological program based on local and national technician needs, and non-degree programs designed to assist out of school adults in the development of personal competencies.

KANAWHA VALLEY GRADUATE CENTER

The Kanawha Valley Graduate Center, established in 1958, serves as a West Virginia University graduate center and is fully integrated into the University structure. Its academic programs coincide with those in Morgantown. The academic program is under the direction of the Dean of the Graduate School and the University Committee on Graduate Centers. However, responsibility for developing and administering is with the Appalachian Center. The present graduate programs are in chemistry, chemical engineering, business administration, mechanical engineering, and civil engineering. Other programs are possible with proper support.

The Kanawha Valley Graduate Center Committee, representative of the professional societies, and dominant types of industry keeps in close contact with the progress, problems, and needs of the Center. The committee assumes a major responsibility in assuring the necessary finances for operation of the Center.

The College of Arts and Sciences

ADMINISTRATIVE OFFICERS

Carl M. Frasure, Ph.D., *Dean of the College of Arts and Sciences* (1961), 1927.
Lloyd R. Gribble, Ph.D., *Associate Dean of the College of Arts and Sciences* (1961), 1929.

FACULTY

Biology

Jay Barton, II, Ph.D., *Chairman and Professor of Biology* (1966).
Nelle P. Ammons, Ph.D., *Professor Emeritus of Botany* (1959), 1920.
Amir A. Badiei, Ph.D., *Assistant Professor of Biology* (1965).
Charles H. Baer, Ph.D., *Associate Professor of Biology* (1965), 1948.
Alice E. Barnett, M.S., *Instructor (part-time) in Biology* (1966).
Elizabeth A. Bartholomew, M.S., *Instructor in Biology* (1963), 1938.
Herald D. Bennett, Ph.D., *Professor of Botany* (1961), 1948.
Arnold Bensin, M.A., *Assistant Professor of Biology* (1966), 1959.
Bruce L. Berry, M.S., *Instructor (part-time) in Biology* (1966).
Robert L. Birch, M.S., *Assistant Professor of Biology* (1965), 1948.
David F. Blaydes, Ph.D., *Assistant Professor of Biology* (1965).
William N. Bradshaw, Ph.D., *Associate Professor of Biology* (1967), 1962.
Albert G. Canaris, Ph.D., *Associate Professor of Zoology* (1962).
Hwa-Ruey Chen, Ph.D., *Assistant Professor of Biology* (1966).
Roy B. Clarkson, Ph.D., *Associate Professor of Biology and Executive Officer* (1965), 1956.
Jesse F. Clovis, Ph.D., *Associate Professor of Biology* (1962), 1957.
Mullen O. Coover, M.S., *Assistant Professor of Biology* (1967), 1960.
Earl L. Core, Ph.D., *Professor of Botany and Curator of Herbarium* (1948), 1928.
Eddie R. Crouse, M.S., *Instructor in Biology* (1965).
John Eichenmuller, Jr., Ph.D., *Assistant Professor of Biology* (1966).
John E. Fairey, III, M.S., *Instructor in Biology* (1965).
Lloyd R. Gribble, Ph.D., *Professor of Zoology* (1947), 1929.
Roland L. Guthrie, Ph.D., *Assistant Professor of Biology and Arboretum Director* (1966), 1959.
Willis H. Hertig, Jr., Ph.D., *Assistant Professor of Biology* (1964), 1959.
Henry W. Hurlbutt, Jr., Ph.D., *Assistant Professor of Biology* (1963).
Jack C. Martin, M.S., *Instructor in Biology* (1965).
Ethel C. Montiegel, M.S., *Assistant Professor of Zoology* (1965), 1956.
Charles Norman, Ph.D., *Professor of Biology* (1961), 1953.
William Pegg, M.S., *Instructor (part-time) in Biology* (1966).
Robert C. Spangler, Ph.D., *Professor Emeritus of Botany* (1955), 1914.
Leland H. Taylor, Sc.D., *Professor Emeritus of Zoology* (1963), 1922.
Leah A. Williams, M.S., *Instructor in Zoology* (1959).

Chemistry

Vincent J. Traynelis, Ph.D., *Chairman and Professor of Chemistry* (1965).
George L. Humphrey, Ph.D., *Associate Chairman and Professor of Chemistry* (1964), 1952.
Rober V. Chastain, Jr., Ph.D., *Associate Professor of Chemistry* (1967), 1966.
Armand R. Collett, Ph.D., *Professor Emeritus of Chemistry; Dean Emeritus, College of Arts and Sciences* (1965), 1924.
John A. Gibson, Jr., Ph.D., *Professor of Chemistry* (1952), 1926.
Jack D. Graybeal, Ph.D., *Associate Professor of Chemistry* (1962), 1957.
George A. Hall, Jr., Ph.D., *Associate Professor of Chemistry* (1956), 1950.
James L. Hall, Ph.D., *Professor of Chemistry* (1955), 1946.
James B. Hickman, Ph.D., *Professor of Chemistry* (1962), 1946.
Charles L. Lazzell, Ph.D., *Professor Emeritus of Chemistry* (1967), 1922.

Dennis W. H. MacDowell, Ph.D., *Associate Professor of Chemistry* (1965), 1959.
Charles G. McCarty, Ph.D., *Assistant Professor of Chemistry* (1964).
Bailie J. McCormick, Ph.D., *Assistant Professor of Chemistry* (1964).
Chester W. Muth, Ph.D., *Professor of Chemistry* (1963), 1949.
Armine D. Paul, Ph.D., *Associate Professor of Chemistry* (1961), 1955.
Peter Popovich, Ph.D., *Associate Professor of Chemistry* (1960), 1946.
John H. Strohl, Ph.D., *Assistant Professor of Chemistry* (1964).
Anthony Winston, Ph.D., *Associate Professor of Chemistry* (1965), 1959.

Economics

Thomas C. Campbell, Jr., Ph.D., *Dean of Colloge of Commerce and Professor of Economics* (1964), 1948.
Vance Q. Alvis, Ph.D., *Professor of Economics* (1960), 1956.
John H. Chapman, Ph.D., *Assistant Professor of Economics* (1965).
Virginia H. Cross, M.B.A., *Lecturer in Economics* (1963).
Betty Fishman, M.A., *Lecturer in Economics* (1963), 1957.
Leo Fishman, Ph.D., *Professor of Economics and Finance* (1952), 1947.
Carl W. Hale, Ph.D., *Associate Professor of Economics* (1966).
Sandra R. Henderson, M.A., *Instructor in Economics* (1964).
Dennis R. Leyden, B.S., *Assistant Professor of Economics* (1962).
Raymond R. McKay, M.S., *Assistant Professor of Economics* (1966).
William H. Miernyk, Ph.D., *Professor of Economics* (1965).
Joseph Newhouse, M.A., *Assistant Professor of Economics* (1956), 1955.
Richard D. Raymond, Ph.D., *Assistant Professor of Economics* (1965).
Evan O. Roberts, Ph.D., *Professor of Economics and Marketing* (1953), 1939.
Robert J. Saunders, Ph.D., *Assistant Professor of Economics* (1965).
Kenneth L. Shellhammer, A.B., *Instructor in Economics* (1965).
Richard H. Slavin, Ph.D., *Associate Professor of Economics* (1964).
Anthony H. Stocks, Ph.D., *Associate Professor of Economics* (1961).
James H. Thompson, Ph.D., *Professor of Economics* (1958), 1948.
Royce J. Watts, M.S., *Instructor in Economics* (1965).
Fred A. Zeller, Ph.D., *Associate Professor of Economics* (1965).

English

J. P. Brawner, Ph.D., *Chairman and Professor of English* (1950), 1935.
Mary R. Ashburn, M.A., *Instructor in English* (1959).
William K. Bennett, M.A., *Instructor in English* (1964).
Joy U. Berkley, M.A., *Instructor in English* (1962), 1960.
Carter R. Bishop, Ph.D., *Professor of English* (retired) (1966), 1929.
Sallie S. Board, M.A., *Instructor in English* (retired) (1964), 1945.
Evelyn L. Bonar, M.A., *Instructor in English* (1958).
H. Barclay Bondurant, M.A., *Instructor in English* (1962).
Frances B. Boyd, M.A., *Instructor in English* (1965).
Arthur C. Buck, M.A., *Instructor in English* (1964).
Mary C. Buswell, M.A., *Assistant Professor of English* (1960), 1947.
Robert W. Clarke, Ph.D., *Assistant Professor of English* (1966).
Mary Lou Clarkson, M.A., *Instructor in English* (1965).
Stephen F. Crocker, M.A., *Professor Emeritus of English* (1963), 1931.
Lloyd M. Davis, M.A., *Assistant Professor of English* (1967), 1959.
Oreta H. Dawson, M.A., *Assistant Professor of English* (1967), 1947.
Edna M. Dillon, M.A., *Instructor in English* (1966).
David W. Dowdell, M.A., *Instructor in English* (1947).
John W. Draper, Ph.D., *Professor Emeritus of English* (1964), 1929.
Richard B. Eaton, Jr., Ph.D., *Assistant Professor of English* (1967).
Nicholas G. Ehle, Jr., M.A., *Instructor in English* (1963).
Ruel E. Foster, Ph.D., *Professor of English* (1957), 1941.
William W. French, M.A., *Assistant Professor of English* (1967), 1964.
Winston E. Fuller, M.A., *Instructor in English* (1965).
Jack W. Futrell, M.A., *Instructor in English* (1955).
Patrick W. Gainer, Ph.D., *Professir of English* (1957), 1946.

Avery F. Gaskins, M.A., *Instructor in English* (1958).
John L. Hicks, Jr., M.A., *Associate Professor of English* (1964), 1949.
Margaret P. Hoke, A.M., *Instructor in English* (retired) (1963), 1955.
Martha C. Howard, M.A., *Assistant Professor of English* (1967), 1960.
Doris John Huzzey, M.A., *Instructor in English* (1955).
Betty Jo Hypes, M.A., *Instructor in English* (1960).
John H. Johnston, Ph.D., *Associate Professor of English* (1964), 1957.
Beatrice B. Law, M.A., *Assistant Professor of English* (1967), 1948.
Sandra S. Leckie, M.A., *Instructor in English* (1963).
Daphne B. Lee, M.A., *Instructor in English* (1964).
Nell L. Leonian, M.A., *Instructor in English* (retired) (1963), 1947.
Russell C. MacDonald, Ph.D., *Associate Professor of English* (1967), 1965.
Iris J. Mankins, M.A., *Instructor in English* (1963).
Mary N. Page, M.A., *Associate Professor of English* (1946), 1925.
Virgil L. Peterson, Ph.D., *Associate Professor of English* (1966).
John Racin, Jr., Ph.D., *Associate Professor of English* (1966), 1964.
Elizabeth F. Reed, M.A., *Assistant Professor Emeritus of English* (1954), 1919.
Kathleen G. Rousseau, M.A., *Instructor in English* (1960).
Aileen K. Shafer, M.A., *Instructor (part-time) in English* (1964).
Fred M. Smith, Ph.D., *Professor Emeritus of English* (1951), 1927.
Elizabeth S. Spindler, M.A., *Instructor in English* (1961).
John F. Stasny, M.A., *Assistant Professor of English* (1966), 1955.
Mary S. Thrasher, M.A., *Instructor in English* (1963).
Celia J. Tower, M.A., *Instructor in English* (1957).
Jerome H. Zwickel, M.A., *Instructor in English* (1963).

Foreign Languages

Robert Stilwell, Ph.D., *Chairman of Foreign Languages and Professor of German* (1963), 1947.
Michel J. Beauchemin, M.A., *Instructor in French* (1956).
Laszlo A. Borsay, Ph.D., *Associate Professor of Ancient and Classical Languages* (1967), 1965.
M. William Buechele, M.A., *Instructor in German* (1964).
Pablo Gonzalez, M.A., *Instructor in Spanish* (1966).
Rafael R. Del Valle, Ph.D., *Associate Professor of Latin American Studies* (1963).
Emile G. Frere, Ph.D., *Associate Professor of French* (1961), 1947.
Eleanor R. Gibbard, M.A., *Instructor* (part-time) *in French and Foreign Language Examiner* (1964).
Francisco Herrera, M.A., *Associate Professor of Spanish* (1960), 1946.
Donald T. Huffman, M.A., *Assistant Professor of German* (1965), 1956.
Victor J. Lemke, Ph.D., *Professor of German* (1955), 1939.
Arthur C. McBride, Docteur de l'Universite de Bordeaux, *Professor of French* (1960), 1926.
Paul D. McQuade, M.A., *Instructor in German* (1966).
Warren F. Manning, Ph.D., *Professor of Romance Languages* (1952), 1932.
Bohdan Plaskacz, Ph.D., *Professor of Slavic Languages* (1963).
Joseph J. Prentiss, M.A., *Instructor in Classical Languages* (1966).
Joseph F. Renahan, M.S., *Instructor in Spanish* (1965).
Armand E. Singer, Ph.D., *Professor of Romance Languages* (1960), 1940.
Claude C. Spiker, Ph.D., *Professor Emeritus of Romance Languages* (1954), 1913.
Harley U. Taylor, Jr., Ph.D., *Associate Professor of German* (1967), 1949.
Rebecca E. Wade, M.A., *Assistant Professor of French* (1955), 1945.
Herbert J. Wilner, D.H.L., *Instructor* (part-time) *in Hebrew* (1962).

Geology and Geography

Dana Wells, Ph.D., *Chairman and Professor of Geology* (1961), 1930.
Arthur E. Burford, Ph.D., *Associate Professor of Geology* (1963), 1960.
Robert G. Corbett, Ph.D. *Associate Professor of Geology* (1967), 1962.
Chester L. Dodson, M.A., *Assistant Professor* (part-time) *of Geology* (1963).
Alan C. Donaldson, Ph.D., *Associate Professor of Geology* (1962), 1957.

Harry M. Fridley, Ph.D., *Professor Emeritus of Geology* (1964), 1928.
William H. Gillespie, M.S., *Instructor* (part-time) *in Geology* (1958), 1957.
Thomas D. Hankins, M.S., *Instructor* (part-time) *in Geography* (1966).
Milton T. Heald, Ph.D., *Professor of Geology* (1960), 1948.
Richard S. Little, Ph.D., *Associate Professor of Geography* (1967), 1962.
John C. Ludlum, Ph.D., *Professor of Geology* (1956), 1946.
Richard R. Pillsbury, M.A., *Assistant Professor of Geography* (1966).
Paul H. Price, Ph.D. *Professor of Geology* (1960).
John J. Renton, Ph.D., *Assistant Professor of Geology* (1965).

History

William T. Doherty, Jr., Ph.D., *Chairman and Professor of History* (1963).
Wesley M. Bagby, Ph.D., *Associate Professor of History* (1962), 1956.
William D. Barns, Ph.D., *Associate Professor of History* (1954), 1940.
John A. Caruso, Ph.D., *Professor of History* (1962), 1950.
Oliver P. Chitwood, Ph.D., *Professor Emeritus of History* (1946), 1907.
Elizabeth Cometti, Ph.D., *Professor of History* (1964).
Donald S. Detwiler, Dr. Phil., *Assistant Professor of History* (1965).
Jason C. Easton, Ph.D., *Professor Emeritus of History* (1963), 1938.
John F. Golay, D.Phil,(Oxon.), *Professor of History* (1961).
James W. Hess, Ph.D., *Assistant Professor* (part-time) *of History* (1964).
Ruth M. Hicks, M.A., *Lecturer in History* (1964).
Elizabeth K. Hudson, Ph.D., *Assistant Professor of History* (1967), 1964.
Mortimer Levine, Ph.D., *Professor of History* (1967), 1955.
Kurt Rosenbaum, Ph.D., *Associate Professor of History* (1966), 1962.
Ivan Scott, Ph.D., *Assistant Professor of History* (1965).
Sara R. Smith, Ph.D., *Associate Professor Emeritus of History* (1961), 1947.
Edward M. Steel, Jr., Ph.D., *Associate Professor of History* (1961), 1956.
Festus P. Summers, Ph.D., *Professor Emeritus of History and University Historian* (1965), 1932.

Library Science

Robert F. Munn, Ph.D., *Director of Libraries and Chairman and Professor of Library Science* (1957), 1952.
Lorise C. Boger, M.S.L.S., *Senior Reference Librarian and Assistant Professor of Library Science* (1959), 1957.
Robert E. Connell, M.L.S., *Senior Reference Librarian and Lecturer in Library Science* (1966).
Stokley B. Gribble, M.S.L.S., *Assistant Director of Libraries and Assistant Professor of Library Science* (1964).
Olive D. Lewis, B.S., *Assistant Professor of Library Science* (1962).
Victorine A. Louistall, M.A.L.S., *Assistant Professor of Library Science* (1966).

Mathematics

Iland D. Peters, M.S., *Acting Chairman and Associate Professor of Mathematics* (1965), 1941.
Lorna D. Carlin, M.S., *Instructor in Mathematics* (1955).
Richard E. Cerullo, M.S., *Instructor in Mathematics* (1964).
Anand M. Chak, Ph.D., *Assistant Professor of Mathematics* (1966).
Charles N. Cochran, M.S., *Associate Professor of Mathematics* (1964), 1951.
Jean M. Coover, A.M., *Instructor in Mathematics* (1956).
Allen B. Cunningham, Ph.D., *Professor of Mathematics* (1960), 1935.
Hannibal A. Davis, Ph.D., *Professor Emeritus of Mathematics* (1965), 1921.
James R. Dosier, M.A., *Instructor in Mathematics* (1959).
Joy B. Easton, M.S., *Assistant Professor of Mathematics* (1967), 1955.
Helen Louise Godfrey, M.S., *Instructor in Mathematics* (1961).
Henry W. Gould, M.A., *Associate Professor of Mathematics* (1964), 1958.
Judith C. Hall, M.S., *Instructor in Mathematics* (1965), 1958.
Lois V. Heflin, M.S., *Instructor in Mathematics* (1956).

Dora S. Hennen, M.S., *Instructor in Mathematics* (1958).
Franz X. Hiergeist, Ph.D., *Assistant Professor of Mathematics* (1964).
Rebecca E. Hill, M.A., *Instructor in Mathematics* (1965).
John W. Hogan, M.S., *Instructor in Mathematics* (1962).
Wilma Jean Loudin, M.S., *Instructor in Mathematics* (1962).
Harry B. McClung, M.A., *Instructor in Mathematics* (1962).
Betty Louise Miller, M.S., *Instructor in Mathematics* (1957).
Elmor L. Peterson, Ph.D., *Assistant Professor of Mathematics* (1966).
John S. Skocik, Jr., M.S., *Instructor in Mathematics* (1962), 1960.
Joseph K. Stewart, Ph.D., *Professor of Mathematics* (1965), 1930.
Charles H. Vehse, Ph.D., *Professor Emeritus of Mathematics* (1965), 1929.
Marvin L. Vest, Ph.D., *Professor of Mathematics* (1955), 1931.
Ronson J. Warne, Ph.D., *Professor of Mathematics* (1964).
Stanley Wearden, Ph.D., *Professor of Statistics* (1966).

Philosophy

Donald A. Coleman, Ph.D., *Assistant Professor of Philosophy* (1965).
John R. Cresswell, Ph.D., *Professor of Philosophy* (1940), 1929.
Theodore M. Drange, Ph.D., *Assistant Professor of Philosophy* (1966).
Robert D. Jewell, Ph.D., *Assistant Professor of Philosophy* (1964).
Thomas W. Scharle, Ph.D., *Assistant Professor of Philosophy* (1966).

Physics

Charles D. Thomas, Ph.D., *Chairman and Professor of Physics* (1956), 1931.
Atam P. Arya, Ph.D., *Associate Professor of Physics* (1967), 1964.
Stanley Farr, M.S., *Assistant Professor of Physics* (1966), 1947.
Oleg Jefimenko, Ph.D., *Professor of Physics* (1967), 1956.
Arnold D. Levine, Ph.D., *Associate Professor of Physics* (1965), 1962.
Fred A. Molby, Ph.D., *Professor Emeritus of Physics* (1948), 1920.
Arthur S. Pavlovic, Ph.D., *Professor of Physics* (1967), 1959.
Edward F. Pulver, Ph.D., *Assistant Professor of Physics* (1965).
Harvey N. Rexroad, Ph.D., *Professor of Physics* (1962), 1947.
John L. Rodda II, Ph.D., *Assistant Professor of Physics* (1965).
Carl A. Rotter, Ph.D., *Assistant Professor of Physics* (1966).
William E. Vehse, Ph.D., *Associate Professor of Physics* (1967), 1961.
Douglas B. Williamson, Ed.D., *Associate Professor of Physics* (1960), 1946.

Political Science

John R. Williams, Ph.D., *Chairman and Professor of Political Science* (1961), 1949.
Claude J. Davis, Ph.D., *Professor of Political Science* (1965).
Thomas M. Drake, M.A., *Assistant Professor of Political Science* (1962).
Carl M. Frasure, Ph.D., *Professor of Political Science* (1961).
Royal C. Gilkey, Ph.D., *Professor of Political Science* (1967), 1957.
John A. Jacobsohn, Ph.D., *Assistant Professor of Political Science* (1965).
David S. Myers, M.A., *Instructor in Political Science* (1966).
Sophia Peterson, M.A., *Assistant Professor of Political Science* (1967), 1966.
George W. Rice, Ph.D., *Associate Professor of Political Science* (1967), 1960.
William R. Ross, M.A., *Associate Professor of Political Science* (1963), 1938.
Irvin Stewart, Ph.D., *Professor of Political Science* (1952), 1946.
David G. Temple, Ph.D., *Assistant Professor of Political Science* (1966).

Psychology

Quin F. Curtis, Ph.D., *Chairman and Professor of Psycology* (1949), 1941.
James F. Carruth, Ph.D., *Professor of Psychology* (1965), 1953.
Chester D. Clapp, Ph.D., *Adjunct Associate Professor of Psychology* (1966).
Phillip E. Comer, Ph.D., *Assistant Professor of Psychology* (1966).
Orrin H. Cross, Ph.D., *Associate Professor of Psychology* (1957), 1951.
Robert L. Decker, Ph.D., *Associate Professor of Psychology* (1962), 1955.

Irving J. Goodman, Ph.D., *Assistant Professor of Psychology* (1966).
Larry R. Goulet, Ph.D., *Assistant Professor of Psychology* (1965).
Barbara B. Griswold, Ph.D., *Assistant Professor of Psychology* (1966).
Robert W. Miller, Ph.D., *Associate Professor of Psychology* (1965).
L. Lynn Ourth, Ph.D., *Associate Professor of Psychology* (1966), 1962.
Eugene A. Quarrick, Ph.D., *Associate Professor of Psychology* (1967), 1962.
Robert E. Rankin, Ph.D., *Professor of Psychology* (1965), 1954.
K. Warner Schaie, Ph.D., *Professor of Psychology* (1967), 1964.
James N. Shafer, Ph.D., *Professor of Psychology* (1966), 1953.
Arthur R. Thomas, Ph.D., *Associate Professor of Psychology* (1962), 1956.

Religious Studies

Manfren O. Meitzen, Ph.D., *Associate Professor of Religious Studies* (1965).
Paul M. Bassett, B.A., B.D., *Assistant Professor of Religious Studies* (1966).

Sociology

Harold A. Gibbard, Ph.D., *Chairman and Professor of Sociology* (1948).
Ronald C. Althouse, Ph.D., *Assistant Professor of Sociology* (1966).
Richard A. Ball, Ph.D., *Assistant Professor of Sociology* (1966).
Harold N. Kerr, Ph.D., *Associate Professor of Sociology* (1959), 1946.
Edward V. McMichael, Ph.D., *Assistant Professor* (part-time) *of Sociology* (1964).
Ann L. Paterson, Ph.D., *Instructor* (part-time) *in Sociology* (1965).
John D. Photiadis, Ph.D., *Professor of Sociology* (1966), 1965.
Leonard M. Sizer, Ph.D., *Associate Professor of Sociology* (1959), 1955.
I. Thomas Stone, Ph.D., *Assistant Professor of Sociology (Anthropology)* (1966).
Ernest A. Vargas, M.A., *Assistant Professor of Sociology* (1966).
Neil J. Weller, Ph.D., *Assistant Professor of Sociology* (1958).

Speech

Leonard M. Davis, Ph.D., *Chairman and Professor of Speech* (1967), 1954.
William L. Barnett, M.A., *Instructor in Speech* (1961).
Beverly Cortes, M.A., *Instructor in Speech* (1961).
Marja Fear, M.A., *Associate Professor Emeritus of Speech* (1953), 1920.
Betty S. Hall, M.A., *Instructor in Speech* (1962).
James H. Henning, Ph.D., *Professor Emeritus of Speech* (1966), 1945.
Donald J. Norwood, M.A., *Instructor in Speech* (1967).
Elizabeth Norwood, M.A., *Instructor in Speech* (1965).
Enid Portnoy, M.A., *Instructor in Speech* (1967), 1958.
Walter A. Proznick, Jr., M.S., *Instructor in Speech* (1965).
William M. Reynolds, Ph.D., *Associate Professor of Speech* (1967).
Walter H. Rockenstein, Ph.D., *Associate Professor of Speech* (1967), 1956.
S. Edwin Ulmer, M.A., *Instructor in Speech* (1966).
Lloyd W. Welden, Sr., M.A., *Professor of Speech* (1961), 1947.

Bureau for Government Research

Claude J. Davis, Ph.D., *Director* (1961), 1957.
Harold E. Neely, LL.B., *Senior Research Analyst* (1964).
William R. Ross, M.A., *Associate Director* (1965).
David G. Temple, Ph.D., *Research Associate* (1966).
Thomas M. Drake, M.A., *Research Associate* (1966).
Norma J. Venable, B.A., *Research Analyst* (1966).

The Bureau for Government Research is concerned with studying and reporting problems of state and local government.

STANDING COMMITTEES

Executive: A. E. Singer (1964), C. D. Thomas (1965), and Dana Wells (1966).
Instructional Policies and Practices: L. R. Gribble (*Chairman*), W. D. Barns, J. P. Brawner, H. A. Gibbard, M. T. Heald, G. L. Humphrey, M. L. Vest, and J. R. Williams.
Scholarship: W. H. Hertig, Jr., (*Chairman*), A. B. Cunningham, R. C. Gilkey, G. A. Hall, A. C. McBride, R. S. Little, Douglas Williamson, and Martha Howard.

General Information

ORGANIZATION AND PURPOSE

The College of Arts and Sciences includes a lower division which consists of work of the first and second years, and an upper division, which consists of work of the third and fourth years.

Instruction in the College of Arts and Sciences is administered through the following departments and interdepartmental areas:

Biology
Chemistry
Economics
English Language and Literature
Foreign Languages
Geology and Geography
History
Home Economics
Humanities
Library Science
Mathematics and Astronomy
Philosophy
Physical Science
Physics
Political Science
Psychology
Religious Studies
Social Science
Sociology
Speech

MAIN OBJECTIVES

The curriculum of the College of Arts and Sciences has these main objectives:

I. *General Culture.* Work of the lower division is intended to complete what is usually termed "a general education". It rounds out the program of studies pursued in high school and promotes full development of the student an an individual and as a member of society. Ideally, the student should undergo a well-proportioned development intellectually, spiritually, physically, and emotionally. The end of such development should be an inner balance or stability on the basis of which further growth can take place. Development of the individual as a member of society is to be measured on terms of his or her usefulness and sense of responsibility to the social order. The student should develop the capacity of intellectual participation as a citizen in the community, state, country, and world. A general education should, therefore, provide for all students a meaningful experience appropriate to the individual and social needs which all citizens have in common as members of a free society in the contemporary world.

II. *Specific Attributes*: Most of the attributes of a general education can be placed in one of three categories: attitudes, areas of knowledge, and skills.

The following attitudes should be maintained as a result of a general education:

(1) An attitude of tolerance or open-mindedness, characterized by a cosmopolitan outlook that will enable the student to see beyond the limits of his own profession, his own economic status, and his own country.

(2) An attitude of truth-seeking characterized by scientific objectivity and motivated by intellectual curiosity;

(3) An attitude of intelligent appreciation towards nature and the arts that will as far as the student's own endowments will permit, help him in his esthetic and ethical choices; and

(4) An attitude of dispassionate self-appraisal, based on an understanding of his own nature and characterized by an awareness of his own mental strength and weakness.

The area of knowledge which should be common possession of all educated persons may be conveniently grouped into two divisions:

(1) A knowledge of man as a social and intellectual being, of his place in contemporary civilization, and of that civilization's place in the history of man.

(2) A knowledge of man as an organism and of man in his relation, direct or indirect, to the biological and physical environment in which he lives.

Three basic skills are regarded as indispensable to all educated persons:

(1) That of self-expression or communication, involving writing, speaking, reading, and listening.

(2) That of calculation, that is, a knowledge of, and some skills in, basic mathematics.

(3) A familiarity with at least one foreign language, not only as a useful skill, but also as a means of promoting tolerance and sympathetic understanding of peoples who do not speak our language.

BUILDINGS AND EQUIPMENT

The principal buildings used by the College of Arts and Sciences are the Physics, Chemistry, and Mineral Industries buildings, Woodburn, Science, Armstrong, Brooks, and Oglebay halls.

The central structure of the present Woodburn Hall was built in 1876, the north wing in 1900, and the south wing in 1910.

The Chemistry Building, a fireproof structure completed in 1926, houses the Department of Chemistry.

Armstrong Hall, a large four-story classroom building, was completed in the spring of 1950 and houses the Department of English and Department of Foreign Languages. Sociology offices are in the "Old" Forestry Building. The Library Science office is in Rooms 7-8 of the Library.

Brooks Hall, a five-story building, was put into service in the fall of 1950. It houses the Department of Biology and includes classrooms, laboratories, and excellent facilities for research work in the biological field.

The Physics Building was occupied in September, 1952. It is a six-story fireproof building, equipped with machine shops, lecture rooms, and laboratories adapted to research in sound microwaves, atomic physics, and radioactivity. There is a special Radiation Laboratory on the second floor, open to all departments in the University interested in biophysics, biochemistry, agricultural chemistry, and medicine. This building also houses the Department of Mathematics.

COURSES RECOMMENDED

Two types of courses are recommended as common means for fostering the attributes of mind and character which a general education should develop in all students enrolled in the lower division of the College. They are:

1. *Courses for the promotion of basic skills*—calculation and communication.

2. *General introductory courses for the elementary but organically integrated study of four fields of human knowledge*—biological science, social science, physical science, and the humanities.

OPPORTUNITY FOR SPECIALIZATION

Work of the upper division is intended to provide intensive study in one or two fields of knowledge. It is based on the belief that an educated man or woman should not only know the fundamentals of several branches of study but should have a rather thorough knowledge of some selected field. In the upper division, therefore, the student concentrates on the major and one or two minors. The curriculum is sufficiently flexible, however, to meet the needs and tastes of individual students without at the same time exposing the student to the disadvantages of the free elective system.

THE MAJOR SUBJECT

In the upper division the student concentrates on a major selected from the following list of subjects:

Biology	German	Political Science
Botany	History	Psychology
Chemistry	Home Economics	Religious Studies
Economics	Latin	Sociology
English	Library Science	Spanish
French	Mathematics	Speech
Geography	Philosophy	Zoology
Geology	Physics	

SCHOLASTIC STANDING, SCHEDULES, AND HONORS

Undergraduate Honors Program

Departments of the College of Arts and Sciences are permitted to establish undergraduate honors programs in conformity with the following provisions:

(a) *Admission to Honors.* Students admitted to honors will normally enter the honors program at the beginning of the second semester of the junior year.

(b) *Eligibility.* The principal qualification for admission to the honors program is ability to pursue independent academic work with vigor and imagination. A student will not qualify for admission to honors unless he has a cumulative grade-point average of at least 3.0 in all courses completed by the end of the fifth semester, and a grade-point average higher than 3.0 in the honor subject.

(c) *Program.* The heart of the honors curriculum is a coherent program of independent work, equal to a 3-hour course per semester, through the last three undergraduate semesters. Normally the honors work in the second semester of the junior year and first semester of the senior year will consist of independent reading or laboratory work, and the writing of reports. In his final undergraduate semester the student will prepare a thesis.

(d) *Examination.* Toward the end of the final undergraduate semester, the student must pass a comprehensive examination in the honors subject. The examination will ordinarily be written, though the Department may also require an oral examination.

Classification of Students

To be classified as a freshman in the College of Arts and Sciences a student must have credit for at least 15 units of entrance requirements; to be classified as a sophomore he must have fulfilled all entrance requirements and have credit for 25 hours of college work; as a junior, 58 hours; as a senior, 92 hours.

Advisers

Lower Division. Each student in the lower division is assigned to an adviser who will assist in registration and who will have general supervision over the work of the student. Electives are chosen and changes in the program are made with the approval of the adviser. Students are urged to confer with advisers in respect to any difficulties or maladjustments in college life.

Upper Division. For Transfer to the upper division a student must have completed a minimum of 58 hours and have maintained a grade-point average if 2.0 on all work for which he has received grades (except "W" and "WP").

Each student in the upper division is assigned to an adviser of the department to which the major subject belongs. The program of study and all changes in class assignments must be approved by the adviser.

Student Class Schedules

Each student will schedule his courses according to the curriculum he has chosen. A second-year student who has not completed all required courses listed in the first year of the curriculum that he is following will be required to schedule

such courses before scheduling new courses. A student will not be registered for an upper-division course not provided in his lower-division curriculum unless he has satisfied all lower-division requirements or has scheduled the courses necessary to meet those requirements.

Withdrawal from schduled classes will be permitted in an order reversed in priority from that stated in the preceding paragraph.

Maximum and Minimum Work

The maximum number of hours per semester for which a student may register is 19, the minimum is 14. A student in the upper division may, however, with the approval of his adviser, register for a maximum of 20 hours per semester provided that during the semester immediately preceding his registration he has attained an average of 3.0 and that the load was not less than 14 hours.

Minimum Scholastic Standards

Normal progress toward upper-division status and graduation requires maintenance of a minimum grade-point average of 2.0. Grade-point averages are computed on all work attempted at West Virginia University, including Potomac State College and the Parkersburg Center.

Probation and Suspension

Any student whose total average on all work attempted at West Virginia University, including Potomac State College and the Parkersburg Center, falls below 2.0 shall be placed on academic probation.

Students enrolled in the College of Arts and Sciences are subject to the University Uniform Suspension Regulations (pages 58-59).

Attendance

1. Students shall attend all classes, including laboratory sessions, for which they have enrolled, unless prevented from doing so by illness, injury, authorized University activities, or other reasons approved by the Dean.

2. A student enrolled in a course numbered under 100 shall be reported by the instructor to his adviser and his dean on an appropriate form as soon as his absences exceed the number of class meetings in a normal week.

3. A student whose absences in a course numbered under 100 exceed the number of class meetings in three normal weeks:

(a) shall again be reported to his adviser and to his dean; and

(b) may be barred from the final examination in the course by the instructor, except that the student is permitted to appeal the instructor's decision to the Dean of the College of Arts and Sciences, whose ruling shall be final.

4. Any student in an upper-division course shall be reported to his adviser and his dean as soon as his absences jeopardize his class standing.

5. The instructor may bar a student in an upper-division course from the final examination for excessive absences if:

(a) the student has been reported to his adviser and to his dean for excessive absences, and

(b) after being reported for excessive absences, his subsequent absences exceed the number of class meetings in a normal week, and

(c) the total number of absences exceeds the number of class periods in the course during three full weeks.

The student may appeal the instructor's decision to the Dean of the College of Arts and Sciences, whose decision shall be final.

6. A student who fails to attend a class meeting of a course after twice being reported for absences from it shall again be reported, and thereupon may be suspended from the University by the Dean of the College of Arts and Sciences.

7. Attendance rules shall apply equally, and separately, to lectures, quiz sections, discussion groups, and laboratory sessions.

8. A student who must be absent from class for an extended period of time shall inform his adviser or his dean.

DUTIES OF ADVISERS

All advisers, upon receipt of reports of excessive absences, shall have conferences with the student concerned and shall make such recommendations and adjustments as are desirable and feasible. If the adviser does not find a satisfactory solution after a conference with the student, he shall report the case to the Dean.

Requirements for the Degree

CREDIT DEFINED

The "semester hour" is the standard for computing the amount of work required for graduation in the curricula leading to the degrees. The "hour" represents the amount of work done in one semester (approximately 17 weeks) in one recitation hour with two preparation hours per week.

BACHELOR OF ARTS DEGREE

The Bachelor of Arts Degree in the College of Arts and Sciences is conferred upon a student who complies with the general regulations of the University concerning degrees, satisfies all entrance, college, and departmental requirements.

BACHELOR OF SCIENCE DEGREE

The Bachelor of Science Degree is conferred upon a student who complies with the general regulations of the University concerning degrees, satisfies all entrance and college requirements, and completes the requirements of one of the fields listed below.

The minimum credit requirement varies with the several departments offering programs leading to the Bachelor of Science Degree. The minimum requirement shall be no less than 128 hours in any area.

For all details of the course of study leading to the Bachelor of Science Degree, refer to the pages listed.

1. Chemistry (see page 139)
2. Geology (see page 168)
3. Physics (see page 184)

A SECOND BACHELOR'S DEGREE

A student who has received a Bachelor's Degree in one department or college of West Virginia University may become eligible for a second Bachelor's Degree by earning an additional 30 semester hours in residence in the College of Arts and Sciences and meeting all requirements, departmental and otherwise, of the second Bachelor's Degree.

GENERAL REQUIREMENTS FOR ALL DEGREES

In order to qualify for a baccalaureate degree in the College of Arts and Sciences, a student must present a minimum of 128 hours of crdit, including 124 hours exclusive of credits in required Physical Education, required Military Science or Air Science, English 0, Mathematics 2, and Foreign Languages 1 and 2 if the student has earned two or more units in the same language in high school or other preparatory school.

Courses are classified as lower-division courses (numbers below 100), and upper-division courses (100-299). The student should complete basic course requirements during his first two years.

When the student has established a minimum of 58 hours of credit with a grade-point average of 2.0 or better, he may enter the upper division. He must

present no less than 58 hours of credit in upper-division work in order to qualify for graduation.

The maximum amount of credit accepted from a junior college accredited by the North Central Association of Colleges and Secondary Schools or other regional accrediting associations will not exceed 72 hours. All courses taken at a junior college will be classified as lower division. No credit will be allowed for courses completed in a junior college subsequent to attainment of junior or higher rank by the student at the University.

Basic Requirements

	Hr.
I. *Military Science or Air Force Aerospace Studies* (for men)[1]	8
Physical Education[2]	
For men	2
For women	4
II. *Foreign Language*	12

Two years of study in one language. A student who presents two units of high school or other preparatory school credit in a language may elect to take University courses numbered 1 and 2 in that language, but no credit will be allowed. He may satisfy the language requirement, however, by completing courses 3 and 4 or other foreign language courses that may be approved by his departmental adviser. Fewer than 6 hours in courses numbered 1 and 2 will not be counted toward any degree.

III. *English Composition* (English 1 and 2) 6

A student who is assigned to English 0 as a result of preliminary tests will be admitted to English 1 only after the successful completion of English 0.

IV. *Distribution Requirements*: The subject groups A, B, C listed below define the Core Curriculum requirements for all undergraduate students in the University. Lists of courses that satisfy the requirements of each of the groups are provided by the University committee on the core curriculum. These lists are the student's guide in the development of his course program. The group requirements may be satisfied by courses in either the lower division or the upper division.

The student is required to complete courses in at least two of the subjects listed in each of the three groups.

Group A: Art, Music, Ancient or Modern Foreign Languages and Literature (beyond credits submitted to meet requirements II, above), Literature of the English Language, Philosophy, Humanities (General Course) .. 12 hr.

Group B: Economics, Geography, History, Psychology, Political Science, Sociology, Social Science (General Course) ..... 12 hr.

Group C: Biology, Chemistry, Geology, Mathematics, Physics, Physical Science (General Course) ..... 12 hr.

In satisfying the requirements of Group C the student must have laboratory experience. The College strongly recommends a full year in one science.

[1]Military Science or Air Force Aerospace Studies instruction is required of all male students except those who at the time of matriculation are 24 years and 3 months of age or have completed no less than 58 hours of work, and all who have credit for 8 hours of Military Science or Air Force Aerospace Studies or 1 unit of entrance credit in military academy. Students must register for Military Science or Air Force Aerospace Studies upon their entrance into the University and continue in the course until the full requirement has been met or until a regular exemption card is filed in the Office of the Registrar.

[2]Two hours of physical education general program for men, to be taken during the first year of residence, and four hours of physical education general program for women, to be taken during the first and second years in residence, are required for graduation of students presenting fewer than 58 semester hours, unless previous credit has been allowed.

V. *Upper-Division Departmental Requirements* in the major subject (18-24 hours), and in one or more minor subjects if required by the department.

A maximum of 42 hours in one departmental subject (as listed on p. 123) may be counted toward graduation. As much as 60 hours may be presented from a department that offers more than one subject (e.g. Foreign Languages).

In the application of this rule, any course that is required of all students of the College (e.g. Freshman English) may be excluded from the hours computed for the major subject.

VI. *Electives* as approved by the departmental adviser, to complete the minimum number of hours required for graduation.

VII. An overall grade-point average of at least 2.0 is required for courses attempted in the major subject. Individual departments may require a grade of "C" or higher for certain specified required courses.

To establish a major sequence and to qualify for graduation, the student must have spent at least two semesters, and have accumulated a minimum of 30 semester hours, as an upper-division student in the department of his major, or under its guidance.

No upper-division course in the major, taken at another institution, will be counted toward meeting the requirements of the major department except with the approval of the department chairman.

NOTES:

Mathematics: The University requires proficiency "equal to that normally attained in two years of high-school mathematics." A student who on entrance fails to meet this standard will be required to take remedial work in mathematics.

English Proficiency: The student who takes his Freshman English at West Virginia University must achieve a grade of "C" in English 2 or pass the English Proficiency Examination. All transfer students must pass this examination in order to qualify for graduation.

WORK COMPLETED IN OTHER COLLEGES OF THE UNIVERSITY

In addition to (1) work conducted by other faculties but recognized as a regular part of the elective program of the College of Arts and Sciences, (2) work offered toward fulfillment of the Core Curriculum, (3) non-professional Education courses required for teacher certification, and (4) six hours of upper-division work in Military Science or Air Force Aerospace Studies, a student may establish credit not to exceed 24 semester hours in approved courses outside the college. The credit that may be transferred from any one college or school shall not exceed 6 hours in upper-division work in Military Science or Air Force Aerospace Studies; 21 hours in Education; and 15 hours in any other one college or school. Under this provision, clinical and skill courses taken in other schools or colleges will not be accepted for credit in the College of Arts and Sciences.

Combined-Course Programs: In completing work for the Bachelor of Arts degree, the student may pursue prescribed Pre-Medical or Pre-Dental courses, or a combined program in Arts and Medicine or Arts and Dentistry. See page 129.

Education, Teaching Fields, and Teacher Certification: A student who wishes to prepare for teacher certification may register during his first two years in the College of Arts and Sciences while completing the General Education requirements. At the beginning of the junior year, he may transfer either to the upper-division in the College of Arts and Sciences, or to the College of Human Resources and Education. If he remains in the College of Arts and Sciences, he will satisfy the requirements in Education and in his chosen teaching fields while proceeding with the requirements of his major department and subject in Arts and Sciences.

PREMEDICAL AND PREDENTAL COURSES (128 Hours)*

The following sequence of courses is worked out for the guidance of students who are preparing for the study of Medicine, Dentistry, and the related professions. All of the required subjects are included. Leading medical and dental educators in the United States today are definitely in favor of a good general training rather than exclusive specialization in the so-called premedical sciences.

It is recommended that all premedical and predental students plan to complete the requirements for the Bachelor of Arts Degree. University Core Curriculum requirements must be satisfied in order to receive the degree.

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Chem. 15	4	Chem. 16	4
Zool. 1 or Biol. 1	4	Zool. 2 or Biol. 2	4
Math. 3	3	Math. 4	3
Phys. Ed.	1	Phys. Ed.	1
Mil. Sci. 1 or A.S. 1 (M)	2	Elective (W)	3
Elective (W)	3	Mil. Sci. 2 or A.S. 2 (M)	2
Maximum hours allowed	17	Maximum hours allowed	18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 115	3	Psych. 1	3
Physics 1	4	Physics 2	4
Modern Foreign Language	3	Modern Foreign Language	3
Mil. Sci. or A.S. 3 (M)	2	Mil. Sci. 4 or A.S. 4 (M)	2
Phys. Ed. (W)	1	Phys. Ed. (W)	1
Group B elective or other	3	Group B elective or other	3
Group A elective or other	3	Group A elective or other	3
	17		19

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Modern Foreign Language	3	Modern Foreign Language	3
Elective	3	Elective	3
American or English Literature	3	American or English Literature	3
Chem. 133	3	Chem. 134 or elective	3
Zool. 231 or elective	5	Zool. 232 or elective	5
	17		17

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 133 or 141 or elective	3-4	Chem. 134 or elective	3
Zool. 231 or elective	5	Zool. 232 or elective	5
Electives	8-9	Electives	8-9
	17-18		18

Many medical schools recommend that Chem. 133 and 134, and Zool. 231 and 232 be taken the year preceding entrance to medical school.

*124 hours exclusive of credit in required Phys. Educ., required Military Science or Air Force Aerospace Studies, English 0, and Math. 2. Credit earned in Foreign Languages 1 and 2 after September 1, 1963, will not be counted toward minimum degree requirements if the student has earned two or more units in the same language in high school or other preparatory school.

Candidates for the A.B. Degree in Premedicine or Predentistry must complete the following minimum number of credit hours in the subjects listed: English, 12 hr. (must include English 1 and 2 and 6 hr. of American or English literature); Foreign Language, 12 hr. (or Courses 3 and 4); Mathematics, 6 hr. (must include Math. 3 and 4); Chemistry, 23 hr. (must include Chem. 15, 16, 115, 133, 134, 141, Zoology, 18 hr. (must include Zool. 1 and 2 [Biol. 1 and 2 may be substituted], 231, 232); Physics, 8 hr; Psychology, 3 hr.; Nonscience group, 30 hr. A minimum of 128 hours including 58 hours of upper-division courses is required for the degree (134 hours—males).

COMBINED COURSES

Special Requirements

The Combined Degree is one wherein the student serves his senior year at the medical or dental school of his choice, and after successful completion of it, then receives his A.B. degree. Prior approval of the Dean of the College of Arts and Sciences of West Virginia University must be had before enrollment in a professional school, in order to receive the Combined Degree. Candidates for a combined degree in Premedicine or Predentistry are required to meet the special provisions of either (a) or (b) below; see the Premedical adviser for curriculum.

(a) A minimum of 96 hours of credit must be completed in the College of Arts and Sciences of West Virginia University of which 32 hours must be from the upper-division courses. An official certification of the professional work must be made by the Registrar of the Professional school to the University Registrar.

(b) A minimum of 64 hours of credits must be completed in the College of Arts and Sciences of West Virginia University of which 32 hours must be from the upper-division courses. This option would apply only to students bringing transfer credits.

Arts and Medicine or Dentistry (128 Hours)

(Recommended Curriculum for a Combined Course in Arts and Medicine or Dentistry)

Students who enter a School of Medicine or a School of Dentistry after the completion of a minimum of 106 hours (men) or 100 hours (women), of which 32 hours must be from upper-division courses, and who have satisfied all provisions of the College of Arts and Sciences regulations governing combined course programs, may receive the Bachelor of Arts Degree upon the successful completion of the first year of medicine or dentistry.

A student who is a candidate for the A.B. degree under the provisions of the curriculum must submit, at the time of his acceptance and prior to his registration in an accredited School of Medicine or Dentistry, a petition for the degree to his adviser who will forward it with his recommendations to the Dean. If the petition is approved, the candidate will be recommended for graduation upon receipt of certification from the professional school by the Registrar of the University, to the effect that he has successfully completed the first year of medicine or dentistry.

FIRST YEAR

Same courses as required in the Curriculum for A.B. degree in Premedicine or Predentistry.

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 115	3	Psych. 1	3
Physics 1	4	Physics 2	4
Modern Foreign Language	3	Modern Foreign Language	3
Mil. Sci. 3 or A.S. 3 (M)	2	Mil. Sci. 4 or A.S. 4 (M)	2
Phys. Ed. (W)	1	Phys. Ed. (W)	1
Hist. 1 or 52	3	Hist. 2 or 53	3
Art 111, Speech 11, or Pol. Sci. 1	3	Art 111, Speech 11, or Pol. Sci. 1	3
	18		18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Modern Foreign Language	3	Modern Foreign Language	3
American or English Literature	3	American or English Literature	3
Chem. 141	4	Pol. Sci. (upper division)	3
Chem. 133	3	Chem. 134	3
Zool. 231	5	Zool. 232	5
	18		18

The following minimum number of credit hours must be completed in the courses listed: English, 12 hr. (must include English 1 and 2 and 6 hr. of American or English literature); Foreign Language, 12 hr. (or Courses 3 and 4); Mathematics, 6 hr. (must include Math. 3 and 4); Chemistry, 23 hr. (must include Chem. 15, 16, 115, 133, 134, 141); Zoology, 18 hr. (must include Zool. 1 and 2 [Biol. 1 and 2 may be substituted], 231, 232); Physics, 8 hr.; Psychology, 3 hr.; Nonscience group, 15 hr. All Core Curriculum requirements must be satisfied.

Students in the Combined Courses program are urged to attend at least one Summer Session.

Pre-Professional Courses

(*Not leading to the degrees in the College of Arts and Sciences*).

(A). Pre-Commerce Program

Pre-Commerce students are expected to complete the Pre-Commerce program study within their first two years of residence at the University. It is particularly important that Economics 51 and 52 be completed during the sophomore year since these courses are prerequisite for all upper-division courses in the College of Commerce.

Students must observe the University Core Curriculum Requirements as to distribution of elective courses. During the four years, the student must complete 12 hours of Group A electives, 15 hours of Group B electives other than Economics but including required Group B courses (Psych. 1, Sociol. 1, and Pol. Sci. 2), and 12 hours of Group C electives including the required Group C courses (Math. 3 and Math. 8) from the list of approved elective courses.

FIRST YEAR

First Sem.[2]	*Hr.*	*Second Sem.*	*Hr.*
English 1—Composition	3	English 2—Composition	3
Pol. Sci. 2—Amer. Fed. System	3	Math. 3—College Algebra[2]	3
Psychol. 1	3	Sociol. 1	3
Mil. Sci. or A.S. 1—Men[1]	2	Mil. Sci. or A.S. 2—Men[1]	2
Phys. Educ.—Men and Women[1]	1	Phys. Educ.—Men and Women[1]	1
Electives—Core Group C	3-4	Electives—Core Group C	3-4
Electives—Women	1	Electives—Core Group A	3
Total—Men	15-16	Total—Men	18-19
Total—Women	14-15	Total—Women	16-17

[1]A minimum of 124 hours of credit must be earned in subjects other than required Physical Education, required Military Science or Air Force Aerospace Studies, English 0, and Math. 2.

[2]The student deficient in Mathematics, as evidenced by the ACT score, must take Math. 2, the remedial algebra course, during the first semester in residence in order to prepare for Math. 3 and Math. 8 required in subsequent semesters.

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Acctg. 51—Principles	3	Acctg. 52—Principles	3
Econ. 51—Principles	3	Econ. 52—Principles	3
Math. 8—Finite Math.[2]	3	Speech 11—Oral Communications	3
Mil. Sci. or A.S. 3—Men[1]	2	Mil. Sci. or A.S. 4—Men[1]	2
Phys. Educ.—Women[1]	1	Phys. Educ.—Women[1]	1
Electives—Core Group A	3	Electives—Core Group A	3
Electives—Core Group C	3	Electives—Men	4
		Electives—Women	3
Total—Men	17	Total—Men	18
Total—Women	16	Total—Women	16

(B). Pre-Education Curriculum

Candidates for the degree of Bachelor of Science in Secondary Education and Bachelor of Science in Elementary Education are registered in the College of Arts and Sciences until they have completed 58 hours or more of academic work in the lower division of the College, with a grade-point average of 2.25. They then transfer to the College of Human Resources and Education, Division of Education. During the Pre-Education period students are advised to complete as many as possible of the courses in general studies required by the Division of Education and for State certification.

In addition to the above general academic requirements, students preparing to teach in high school or elementary school are advised to complete as many as possible of the required academic courses in two teaching fields or one comprehensive field.

Upon the successful completion of the entire 64 hours of work in the lower division, Pre-Education students are eligible for the Junior Certificate of the College of Arts and Sciences.

Effective September, 1967, the following will be required for admission to the undergraduate programs in the Division of Education:

1. A grade-point average of 2.25 on all work attempted.
2. A grade-point average of 2.25 on all work attempted for enrollment in the student teaching block.
3. For registration in professional education courses beyond Education 106, student must complete requirements for Education 100.

Teaching Certificates

The Dean of the College of Human Resources and Education is authorized by the Board of Governors to recommend all applicants for teaching certificates.

High-school teaching certificates may be obtained by students registered in the College of Arts and Sciences as well as in the College of Human Resources and Education, provided they meet the requirements for certification. To qualify for the elementary-school teaching certificate, the students will transfer to the College of Human Resources and Education at the beginning of the junior year.

Candidates for the A.B. degree who wish to qualify for teaching certificates should indicate this fact to their adviser and plan their entire course with this in view. Unless this is done by the end of the freshman year, students may encounter difficulties in qualifying for the certificate by the time they receive their degree.

As a check, students should consult each semester with Mary C. Buswell, adviser of Pre-Education candidates for high-school or elementary-school teaching certificates, in the Pre-Education Office.

(C). Pre-Journalism Studies

Candidates for the degree of Bachelor of Science in Journalism are registered in the College of Arts and Sciences until they have earned at least 58 semester hours of college credit. Studies during the freshman and sophomore years are designed so that the student may fulfill nearly all University Core Curriculum requirements, while at the same time exposing himself to the varied areas of study so that he may intelligently select a minor field and a journalism specialization upon entering his junior year.

FIRST YEAR	*Hr.*	SECOND YEAR	*Hr.*
Journalism 1	2	Journalism 18	3
Journalism 2*	1	Journalism 19	3
English 1 and 2	6	Mil. Sci. or A.S. 3 and 4	4
Mil. Sci. or A.S. 1 and 2	4	Physical Education (Women only)	2
Physical Education	2	Core requirements	
Core requirements			

*Not required of students pursuing Specialization in Agriculture or Science. Broadcasting majors will substitute Journalism 80.

(D). Curriculum in Pre-Medical Technology

The curriculum which follows is designed to satisfy the course requirements for admission to the specialized and technical portion of the curriculum in Medical Technology offered by the School of Medicine. The Core Curriculum requirements must be satisfied, and 64 hours total are required.

Students are not transferred automatically from the pre-professional course (first two years) to the professional course (third and fourth years). Application for admission to the third year should be made on forms obtainable from the Office of the Assistant Registrar, Medical Center; when completed, the forms are to be returned to his office. Preference is given to residents of West Virginia.

Application should be filed before February of the second year.

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 15, Inorganic	4	Chem. 16, Inorganic	4
English 1, Comp. & Rhetoric	3	English 2, Comp. & Rhetoric	3
Elective*	3	Math. 3	3
Biol. 1 or Zool. 1, General	4	Biol. or Zool. 2, General	4
Mil. Sci. 1 or A.S. 1 (M)	2	Mil. Sci. 2 or A.S. 2 (M)	2
Phys. Ed.	1	Phys. Ed.	1
Med. Tech. 1**	1	Med. Tech. 2**	1
Maximum Hrs. Allowed 18	16-18	Maximum Hrs. Allowed 18	16-18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 131, Organic	4	Chem. 115, Quantitative	3
Elective*	3-9	Elective*	3-9
Physics 1, Introductory	4	Physics 2, Introductory	4
Mil. Sci. 3 or A.S. 3 (M)	2	Mil. Sci. 4 or A.S. 4 (M)	2
Phys. Ed. (W)	1	Phys. Ed. (W)	1
Med. Tech. 3**	1	Med. Tech. 4**	1
	15-18		16-19

*Electives: Students who plan to do graduate study should take foreign language as Elective. Other recommended Electives fall in the Core Groups A and B. Math. 2, if required, should be taken here in the first year.

**Medical Technology 1, 2, 3, and 4 are not required subjects, but it is highly recommended that all students take these courses.

(E). Pre-Pharmacy Curriculum

The professional curriculum of the School of Pharmacy is based on two years of pre-pharmacy requirements. The pre-pharmacy requirements are as follows:

Algebra	3 hr.	Chemistry, Organic	8 hr.
Trigonometry	3 hr.	Physics	8 hr.
English Composition	6 hr.	Electives from	
Principles of Economics	6 hr.	Core Group A	12 hr.
Chemistry, General	8 hr.	Core Group B	6 hr.
Biology, General	8 hr.		
		Total	68 hr.

Students required to take Military Science or Air Force Aerospace Studies will be exempt from an equivalent number of hours of electives in Core Groups A and B. A "C" average is considered the minimum standard for admission.

For admission to the School of Pharmacy, formal application should be made to the Admissions Committee of the School as early as possible after February 1, but before August 1, preceding the fall term in which the student is seeking enrollment. Complete information may be obtained from the Dean of the School of Pharmacy, or from the Office of the Assistant Registrar, Medical Center.

Courses of Instruction and Curricula

BIOLOGY

Laboratory Fees

A non-refundable fee is required of all students who take the following laboratory courses in Biology, Botany, and Zoology:

Course	*Per Semester*	*Course*	*Per Semester*
Biol. 1	$ 8.00	Bot. 262	$ 8.00
Biol. 2	8.00	Bot. 325	8.00
Biol. 51	4.00	Bot. 332	8.00
Biol. 121	8.00	Bot. 374	8.00
Biol. 215	8.00	Zool. 31	4.00
Biol. 273	12.00	Zool. 224	8.00
Biol. 274	12.00	Zool. 231	12.00
Bot. 61	4.00	Zool. 232	12.00
Bot. 67	4.00	Zool. 233	8.00
Bot. 68	4.00	Zool. 236	12.00
Bot. 104	8.00	Zool. 237	4.00
Bot. 161	8.00	Zool. 251	8.00
Bot. 171	5.00	Zool. 255	8.00
Bot. 221	8.00	Zool. 263	8.00
Bot. 231	8.00	Zool. 264	8.00
Bot. 232	8.00	Zool. 265	4.00
Bot. 235	8.00	Zool. 271	8.00
Bot. 250	8.00	Zool. 272	12.00
Bot. 256	8.00	Zool. 276	12.00
Bot. 261	8.00		

Students may select biology, botany, or zoology as their major subject. Biology 1 and 2 are required of all majors.

Prospective majors in biology, botany, or zoology should include in their schedule of lower-division work Chemistry 15 and 16, Physics 1 and 2, Mathematics 3 and 4.

Courses in botany and zoology (not to exceed 10 semester hours in each) may be counted toward a major in biology, provided that the student has a minimum of 6 semester hours in upper-division courses in biology.

Teacher Certification for Biology Majors

A student may meet the requirements for the A.B. degree with a major in Biology and at the same time qualify for teacher certification. The curriculum suggsted is designed to include the requirements of the basic subjects prescribed for the first two years for prospective teachers. During the junior and senior years the courses required in the major and minor subjects will largely coincide with those required for first and second teaching fields for high school teachers. At the same time they will complete the required work in Education in the teacher-training program.

Suggested Schedule of Required Curriculum for A.B. Degree With Major in Biology

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Math. 3	3	Math. 4	3
Biol. 1	4	Biol. 2	4
Foreign language	3	Foreign language	3
Phys. Ed. 1 (M)	1	Phys. Ed. 2 (M)	1
Phys. Ed. 3 (W)	1	Phys. Ed. 4-25 (W)	1
Mil. or A.S. 1	2	Mil. or A.S. 2	2
Women—14		Women—14	
Men—16		Men—16	

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 15	4	Chem. 16	4
Social Sci. 1	4	Social Sci. 2	4
Foreign language	3	Foreign language	3
Educ. 105	3	Educ. 106	3
Educ. 100	1	Art 30	3
Music 10	2	Phys. Ed. 102 (W) 4-25	1
Phys. Ed. 101 (W) 4-35	1	Mil. or A.S. 4	2
Mil. or A.S. 3	2		
Women—18		Women—18	
Men—19		Men—19	

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Physics 1	4	Physics 2	4
English 3, 4, 5, or 6	3	Hist. 2	3
Hist. 1	3	Bacteriol. 141	4
Elective	3	Zool. 271	4
Educ. 109	2	Health Ed. 102	2
Biol. 121	4		
	19		17

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Biol. 205, 215 or 221	4	Educ. 124	6
Chem. 133	3	Educ. 150	2
Chem. 135	1	Educ. 120	4
Botany 171	4	Chem. 134	3
Zool. 251	4	Chem. 136	1
Genetics 171 & 172	4	Bot. 104	4
	20		20

Suggested Schedule of Required Curriculum for A.B. Degree With Major in Botany

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Biol. 1	4	Biol. 2	4
English 1	3	English 2	3
Chem. 15	4	Chem. 16	4
Math. 3	3	Math. 4	3
Phys. Ed.	1	Phys. Ed.	1
Mil. or A.S. 1	2	Mil. or A.S. 2	2
Elective	2	Elective	2
	17-19		16-17

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Foreign language	3	Foreign language	3
Phys. Ed. (W)	1	Phys. Ed. (W)	1
Physics 1	4	Physics 2	4
Elective	6-8	Elective	6-8
Mil. or A.S. 4	2	Mil. or A.S. 4	2
	16-17		16-18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Lower Div. Elect.	3	Elect.	3
Foreign language	3	Foreign language	3
Upper Div. Elect.	3	Genetics 171 & 172	4
Botany (upper div.)	7-9	Botany (upper div.)	6-8
	16-18		16-18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 133	3	Chem. 134	3
Chem. 135	1	Chem. 136	1
Botany (upper div.)	9-11	Botany (or elect.) (upper div.)	9-11
Elective	3	Elective	3
	16-18		16-18

Suggested Schedule of Required Curriculum for A.B. Degree With Major in Zoology

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Biol. 1	4	Biol. 2	4
English 1	3	English 2	3
Chem. 15	4	Chem. 16	4
Math. 3	3	Math. 4	3
Phys. Ed.	1	Phys. Ed.	1
Mil. or A.S. 1	2	Mil. or A.S. 2	2
	17-18		16-17

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Physics 1	4	Chem. 115	3
Foreign language	3	Physics 2	4
Phys. Ed. (W)	1	Foreign language	3
Electives	5-8	Phys. Ed. (W)	1
Mil. or A.S. 3	2	Genetics 171 & 172	4
		Elective	1
		Mil. or A.S. 4	2
	17-18		18-19

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Elective	3	Elective	3
Chem. 133	3	Foreign language	3
Chem. 135	1	Botany	4
Foreign language	3	Chem. 134	3
Botany	4	Chem. 136	1
Zool. 251	4	Electives (upper division)	3-5
	18		18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 141	4	Zool. 232	5
Zool. 231	5	Zool. 274	4
Electives (upper division)	4	Electives (upper) division)	7-9
Zool. 273	4		
	18		18

Courses of Instruction

BIOLOGY

Lower Division

1, 2. **General Biology.** I, II. 4 hr. per sem. General introductory course. Students having credit in Botany 1 and 2 or Zoology 1 and 2 may not get credit for these courses.

Upper Division

121. **General Ecology.** I. 4 hr. PR: Biol. 1-2 or equiv., plus 4 hr. upper division. The relationships of plants and animals to their environment are studied to illustrate basic ecological principles.

161. **Biosystematics.** I. 3 hr. PR: Biol. 1 and 2 or equiv. The development and principles of systematics as a logical outcome of speciation in plants and animals.

191. **Honors Course.** II. 3 hr. PR: Second semester of junior year, recommendation of adviser. Departmental majors only. Supervised reading and investigation.

192. **Honors Course.** I. 3 hr. PR: Biol. 191. Supervised reading investigation.

193. **Honors Course.** II. 3 hr. PR: Biol. 192. Thesis embodying results of work done in Biol. 191 and 192.

203. **Natural History.** S. 3 hr. PR: General biology or equiv. Lectures, demonstrations, and field trips designed to provide a brief survey of certain aspects of general biology suitable for elementary and high schools.

204. **Biology Workshop.** S. 3 hr. PR: Biol. 2 or equiv. Primarily for high school teachers of biology. Lectures, discussions, and trips to various campus facilities are designed to meet needs of the students enrolled. (Not open to biology majors.)

205. **Principles of Evolution.** I. S. 3 hr. PR: Biol. 2. Introduction to the study of evolution.

206. **Modern Concepts in Biology.** S. 3 hr. PR: Biol. 2 or equiv. Designed to acquaint the advanced student or teacher with the latest methods and knowledge in the field of biology.

207. **History of Biology.** I. 3 hr. PR: Biol. 2. History of the development of biological knowledge, with philosophical and social backgrounds.

208. **Great Texts of Biology.** II. 1 hr. PR: Biol. 2 or equiv. Study of some of the great classics in biology, such as Theophrastus' **Enquiry Into Plants,** Vesalius' Epitome, Harvey's **Motion of the Heart and Blood,** Darwin's **Origin of Species,** and Mendel's **Experiments on Hybrid Plants.**

215. **Cytology.** II. 4 hr. PR: Biol. 2 or equiv. Cells, their structure and functions.

273, 274. **Cellular and Molecular Biology.** I, II. 4 hr. per sem. PR: Biol. 2, Chem. 238, and Physics 2. A consideration of the functions common to all forms of living matter.

296, 297. **Special Topics.** I, II, S. 1-4 hr. PR: Consent. Critical studies of topics assigned by the instructor.

BOTANY

Lower Division

61. **Systematic Botany.** I. 2 hr. Identification of vascular plants. Primarily for Forestry students.

67. **Dendrology (Angiosperms).** I. 4 hr. PR: Biol. 2. Classification and distribution of the angiosperm timber trees of the United States. Primarily for Forestry students.

68. **Dendrology (Gymnosperms).** II. 1 hr PR: Biol. 2. Classification and distribution of the gymnosperm timber trees of the United States. Primarily for Forestry students.

Upper Division

104. **The Plant Kingdom.** II, S. 4 hr. Survey of the plant kingdom. Not open to Botany majors nor to students with credit in Bot. 2.

161. **Systematic Botany.** II. 4 hr. Identification and classification of vascular plants.

171. **Plant Physiology.** I, II. 3 hr. PR: Chem. 15, 16, or equiv. Physiochemical processes of plants.

191. **Honors Course.** II. 3 hr. PR: Second sem. of junior year and recommendation by adviser. Departmental majors only. Supervised reading and investigation.

192. **Honors Course.** I. 3 hr. PR: Bot. 191. Supervised reading and investigation.

193. **Honors Course.** II. 3 hr. PR: Bot. 192. Thesis embodying the results of the work done in Bot. 191 and 192.

201, 202. **Seminar.** I, II. 1 hr. Topics of general interest to botanists are considered.

218. **Economic Botany.** II. 3 hr. PR: Biol. 2. Plants from the standpoint of their value to man.

221. **Plant Ecology.** I. 4 hr. PR: Biol. 2. Environmental relationships of plants.

224. **Plant Communities.** S. 3 hr. PR: Biol. 1 and 2 or equiv. Field studies in ecology.

227. **Geographic Botany.** I, S. 3 hr. PR: Biol. 2. Study of plant groupings and world-wide distribution of plants.

231. **Plant Morphology.** I. 4 hr. PR: Biol. 2. Development and structure of algae and fungi.

232. **Plant Morphology.** II. 4 hr. PR: Biol. 2. Development and structure of bryophytes and vascular plants.

235. **Plant Anatomy.** I. 4 hr. PR: Biol. 2 or equiv. Anatomy of seed plants.

236. **Plant Morphogenesis.** II. 4 hr. PR: Chem. 133; Bot. 235 or Biol. 215; Bot. 171 or Genet. 171. Experimental studies of plant growth and development.

250. **Fresh-Water Algae.** I. 4 hr. PR: Biol. 2 or equiv. Taxonomy, cytology, and ecology of aquatic, aerial, and land forms of fresh-water algae.

255. **Bryophytes.** II. 2 hr. PR: Biol. 2. Identification of liverworts and mosses.

256. **Vascular Cryptogams.** II. 4 hr. PR: Biol. 1, 2. Taxonomy, anatomy, cytology, and ecology of the club mosses, horsetails, and ferns.

261. **Advanced Systematic Botany.** I. 3 hr. PR: Bot. 161 or equiv. Taxonomy of pteridophytes, gymnosperms, and monocotyledons.

262. **Advanced Systematic Botany.** II. 3 hr. PR: Bot. 161 or equiv. Taxonomy of dicotyledons.

263. **Taxonomy of Vascular Plants.** S. 3 hr. Field studies in the taxonomy of higher plants.

265. **Aquatic Seed Plants.** I. 3 hr. PR: Biol. 2 or equiv. Classification, ecology, and economic importance of aquatic seed plants.

266. **Flora of West Virginia.** II, S. 3 hr. PR: Biol. 2 or equiv. Consideration of native plant life of the State.

268. **Dendrology.** II. 2 hr. PR: Biol. 2. Identification and classification of woody plants.

296, 297. **Special Topics.** I, II, S. 1-4 hr. per sem. PR: Consent. Critical studies of topics assigned by the instructor.

ZOOLOGY

Upper Division

191. **Honors Course.** II. 3 hr. PR: Second semester of junior year, recommendation by adviser. For departmental majors only. Supervised reading and investigation.

192. **Honors Course.** I. 3 hr. PR: Zool. 181. Supervised reading and investigation.

193. **Honors Course.** II. 3 hr. PR: Zool. 192. Thesis embodying the results of the work done in Zool. 191 and 192.

210. **Animal Behavior.** I. 3 hr. Facts and principles of individual and group behavior.

222. **Field Studies of Invertebrates.** S. 3 hr. Taxonomy and ecology of the invertebrates.

223. **Field Studies of Vertebrates.** S. 3 hr. Taxonomy and ecology of the vertebrates.

224. **Limnology.** I. 4 hr. PR: Biol. 2 or equiv. Physical, chemical, and biological characteristics of inland waters with an introduction to principles of biological productivity.

231. **Comparative Anatomy.** I. 5 hr. PR: Biol. 2 or equiv. Organs and systems of various vertebrates, together with other facts of interest concerning these animals.

232. **Vertebrate Embryology.** II. 5 hr. PR: Biol. 2 or equiv. Introductory study of developments, of vertebrates, based on frogs, fowl, and mammals.

233. **Comparative Histology.** II. 4 hr. PR: Zool. 231 and consent. Limited to seniors and graduate students. Comparative study of tissues of the vertebrates.

235. **Comparative Development Anatomy.** II. 3 hr. PR: Zool. 231. Anatomy and development of the organs and systems of various vertebrates.

236. **Comparative Neuroanatomy.** II. 4 hr. PR: Zool. 231 and consent. Comparative study of development and anatomy of the nervous systems of vertebrates.

237. **Osteology.** I. 2 hr. PR: Biol. 2 or equiv. Development and anatomy of the skeleton.

251. **Invertebrate Zoology.** I. 4 hr. PR: Biol. 2 or equiv. Advanced study of animals without backbones.

255. **General Parasitology.** I. 4 hr. PR: Biol. 2 or equiv. The biology of parasites.

263. **Ichthyology.** II. 3 hr. PR: Biol. 2 or equiv. Evolution, taxonomy, anatomy, and physiology of fishes.

264. **Fisheries Biology.** II. 4 hr. PR: Biol. 2 or equiv. and Zool. 263. Fisheries management, emphasizing study of age and growth, population techniques, and concept of yield.

265. **Ornithology.** II. 3 hr. PR: Biol. 1 or equiv., consent. Field and laboratory studies on identification, migration, protection, nesting, and food habits of birds.

271. **Human Physiology.** I, II, S. 4 hr. Introductory course in the functions of man. This course may not be counted towards an advanced degree in biology.

272. **Physiology of the Endocrines.** II. 4 hr. PR: Comparative anat., or vertebrate embryology, and organic chem. Regulation of the organs of internal secretion, mechanisms of action of the hormones produced, and experimental techniques used in study of the endocrine system.

273, 274. **Cellular Physiology.** I, II. 4 hr. per sem. PR: Biol. 2 or Zool. 2, Chem. 134, and Physics 2 or equiv. Study of the molecular machinery of the cell and functions common to all forms of life.

276. **Comparative Physiology.** I. 4 hr. PR: Zool. 273 or equiv. Study of the diverse ways in which different kinds of animals meet their functional requirements.

296, 297. **Special Topics.** I, II, S. 1-4 hr. PR: Consent. Critical studies of topics to be assigned by the instructor.

CHEMISTRY

Laboratory Fees

A non-refundable fee is required of all students who take the following laboratory courses in Chemistry and Physical Science:

Course	*Per Semester*	*Course*	*Per Semester*
Chem. 11	$10.00	Chem. 141	12.00
Chem. 12	10.00	Chem. 145	16.00
Chem. 15	10.00	Chem. 146	16.00
Chem. 16	10.00	Chem. 202	16.00
Chem. 17	12.00	Chem. 204	16.00
Chem. 18	12.00	Chem. 210	16.00
Chem. 102	16.00	Chem. 211	16.00
Chem. 111	12.00	Chem. 230	16.00
Chem. 115	12.00	Chem. 239	16.00
Chem. 120	16.00	Chem. 240	16.00
Chem. 131	12.00	Physical Science 1	10.00
Chem. 135	16.00	Physical Science 2	10.00
Chem. 136	16.00		

Note: A charge is made for excessive breakage in addition to the non-refundable fee.

Bachelor of Science in Chemistry

The Bachelor of Science degree is designed for those students who desire to qualify for professional positions in industry and governmental services as well as those who plan to do graduate work in chemistry. Requirements for the Bachelor of Science degree are listed below. Electives must be chosen so as to satisfy the distribution of electives required for the A.B. degree. A total of 136 credit hours is required of which a minimum of 126 hours must be established in subjects exclusive of credits earned in required Physical Education, required Military Science or Air Force Aerospace Studies, English 0, and Math. 2.

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 17*	5	Chem. 18*	5
Math. 3	3	English 2	3
Math. 4	3	Math. 15	4
English 1	3	Mil. or A.S. 2	2
Mil. or A.S. 1	2	Phys. Ed.	1
Phys. Ed.	1	Elect. (A and S)	3
	17		18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 133	3	Chem. 134	3
Chem. 135	1	Chem. 136	1
Physics 11	4	Physics 102	4
German 1	3	German 2	3
Math. 16	4	Math. 17	4
Mil. or A.S. 3	2	Mil. or A.S. 4	2
	16		17

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 233	3	Chem. 210	3
Chem. 145	1	Chem. 146	2
Chem. 143	3	Chem. 144	3
Chem. 101	2	German 122	3
German 121	3	Elect. (A and S)	3
Elect. (A and S)	3	Elect. (A and S)	3
Elect. (A and S)	3		
	18		17

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 221	3	Chem. Electives**	6
Chem. Electives**	4	Electives	10
Electives	9		
	16		16

*Chem. 15, 16, 111, and 115 will be required for those students not qualified for Chem. 17 and 18.

**Must include at least one laboratory course in a field other than organic chemistry

A second language, French or Russian, is recommended. Students desiring to pursue an honors program may include 4 to 6 hours of Chemistry 204 as chemistry electives.

Bachelor of Arts in Chemistry

The course requirements for the Bachelor of Arts degree with a major in chemistry are the same as for the Bachelor of Science degree in Chemistry with the following exceptions: (1) Chemistry 101 is not required; (2) the total including required Military Science or Air Force Aerospace Studies and Physical Education for men is 134 semester hours and for women the total is 128 semester hours; (3) nine semester hours of general electives must be substituted for chemistry electives.

Required Courses

Chem. 15 and 16 or Chem. 17 and 18 are prerequisite to all other courses in chemistry. Chemistry majors are required to take Chem. 15, 16, 111, and 115, or Chemistry 17 and 18, and the following: Chem. 101, 210, 230, 133, 134, 135, 136, 145, and 146; Math. 16 and 17; Physics 11 and 102, or the equivalent.

Courses of Instruction

Lower Division

11. **Survey of Chemistry. I.** 4 hr. PR: English 1 or concurrent enrollment. Part one of a course designed primarily for students who will not take more than one year of college chemistry. This course emphasizes the role and significance of chemistry in the modern world. The topics covered include: atomic structure; chemical bonding; acids, bases, and salts; perodicity; properties of gaseous, liquid, and solid states of matter; a study of the chemistry of the more common elements. Not open to students in Engineering. Two hr. of lect., 1 hr. of rec., 3 hr. of lab. each week.

12. **Survey of Chemistry. II.** 4 hr. PR: Chem. 11. A continuation of Chem. 11 with an introduction to organic and biochemistry. Two hr. of lect., 1 hr. of rec., 3 hr. of lab. each week.

15. **Fundamentals of Chemistry. I, II.** 4 hr. PR: English 1 and Math. 2 or equiv. or concurrent enrollment. A course designed for students who plan to take more than one year of college chemistry and for students in Engineering. This course will seek to develop terminology, a working knowledge of the conceptual foundations and quantitative relationships on which subsequent courses in chemistry will be built. Two hr. of lect., 1 hr. of rec., and 3 hr. of lab. each week.

16. **Fundamentals of Chemistry. I, II.** 4 hr. PR: Chem. 15. Continuation of Chem. 15. Two hr. of lect., 1 hr. of rec., and 3 hr. of lab. each week.

17. **Principles of Chemistry. I.** 5 hr. PR: High schol chemistry and concurrent enrollment in Math. 3 or more advanced mathematics. A more advanced treatment of the principles and theories of chemistry than offered in Chem. 15 and 16. Primarily for students specializing in chemistry and chemical or metallurgical engineering. Three hr. of lect., 1 hr. of rec., 3 hr. of lab. each week.

18. **Principles of Chemistry. II.** 5 hr. PR: Chem. 17. A continuation of Chem. 17. Prerequisite for Chem. 260. Two hr. of lect., 1 hr. of rec., and two 3-hr. lab. periods each week.

Upper Division

101. **Chemical Literature. I.** 2 hr. PR: Organic Chem. Study of techniques of locating, utilizing, and presenting information needed by the research worker in chemistry.

102. **Undergraduate Research. I, II.** 1-3 hr. PR: Consent. Individual investigations under supervision of instructor.

111. **Qualitative Analysis.** I. 4 hr. PR: Chem. 16. Required of students whose major is chemistry unless Chem. 18 has been completed. Recommended for premedical and predental students.

115. **Quantitative Analysis.** I, II. 3 hr. PR: Chem. 16. For premedical, predental and premedical technology students. Required of chemistry majors unless Chem. 18 has been completed.

120. **Inorganic Syntheses.** 2 hr. PR: Chem. 18 or Chem. 15, 16, and 115.

131. **Organic Chemistry.** I. 4. hr. PR: Chem. 16. For students in agriculture and home economics. 3 lect., 1 lab.

133. **Organic Chemistry.** I, II. 3 hr. PR: Chem. 16 or 18 and 135 or concurrent enrollment. Required of students who major in chemistry, pharmacy, premedicine, predentistry, and chemical engineering.

134. **Organic Chemistry.** I, II. 3 hr. PR: Chem. 133, 135, and 136 or concurrent enrollment. Continuation of Chem. 133.

135. **Organic Chemistry Laboratory.** I, II. 1 hr. PR: Chem. 133 or concurrent enrollment.

136. **Organic Chemistry Laboratory.** I, II. 1 hr. PR: Chem. 133, 134, and 135 or concurrent enrollment.

141. **Physical Chemistry.** I. 4 hr. PR: Chem. 16. Required of premedical and predental students. Recommended for geology majors and other non-chemistry majors. 3 lect., 1 lab.

143. **Physical Chemistry.** I. 3 hr. PR: Chem. 133, Physics 102, Math. 16. Required of students who major in chemistry or chemical engineering.

144. **Physical Chemistry.** II. 3 hr. PR: Chem. 143. A continuation of Chem. 143.

145. **Physical Chemistry Laboratory.** I. 1-2 hr. PR: Chem. 143 or concurrent enrollment. Required of majors in chemistry.

146. **Physical Chemistry Laboratory.** II. 1-2 hr. PR: Chem. 143, 144, and 145 or concurrent enrollment. Required of majors in chemistry.

202. **Selected Topics.** I, II. 1-3 hr. PR: Consent. Individual instruction under supervision of an instructor.

204. **Honors Course.** I, II. 1-3 hr. PR: Consent. Research for students in the honors program. Thesis required.

210. **Instrumental Analysis.** I. 3 hr. PR: Chem. 143 or consent.

211. **Intermediate Analytical Chemistry.** II. 3 hr. PR: Chem. 144 or concurrent enrollment. Required of chemistry majors.

221. **Intermediate Inorganic Chemistry.** I. 3 hr. PR: Chem. 144 or concurrent enrollment. Required of chemistry majors. An intensive study of the basic principles of inorganic chemistry, including atomic structure, bonding theories, stereochemistry, acid-base theory, and coordination chemistry.

222. **Chemistry of Inorganic Compounds.** II. 3 hr. PR: Chem. 221. Reactions and properities of the elements and their compounds.

230. **Qualitative Organic Analysis.** I. 3 hr. PR: Chem. 134, 136. This course, or its equivalent, required for all students expecting to do thesis work in organic chemistry. Both chemical and physical methods are used to study unknowns. 1 lect., 2 lab.

231. **Advanced Organic Chemistry I.** I. 3 hr. PR: Chem. 134. Structural concepts (orbital representations, resonance, stereochemistry), reaction mechanisms and synthetic applications (condensation reactions, nucleophilic substitution and addition) in organic chemistry at an advanced level.

232. **Advanced Organic Chemistry II.** II. 3 hr. PR: Chem. 231. Synthetic organic chemistry with particular emphasis on aromatic systems, oxidation and reduction techniques, molecular rearrangements, and a review of recent synthetic methods.

234. **Physical Methods in Organic Chemistry.** II. 2 hr. PR: Chem. 136. Applications of physical methods (spectroscopy, n.m.r., l.s.r., mass spectroscopy, optical rotatory dispersion, X-ray diffraction, and other methods) to problems in organic chemistry with emphasis on structure elucidation.

239. **Organic Syntheses.** I or II. 2 hr. PR: Chem. 136. Modern synthetic methods of organic chemistry.

240. **Practical Infrared Spectroscopy.** II. 3 hr. PR: Physical Chem. or consent. A practical course for students in chemistry and related fields who may use infrared spectroscopy as a tool in research and applied science.

241. **Chemical Thermodynamics.** I. 3 hr. PR: Chem. 144.

242. **Introductory Molecular Structure.** II. 3 hr. PR: Chem. 143. An introduction to the quantum theory of chemical bonding and discussion of experimental methods for determining molecular structure and bond properties.

244. **Colloid and Surface Chemistry.** II. 2 hr. PR: Physical Chem.

ECONOMICS

Since 1952 the College of Commerce has offered all courses in Economics and has granted the B.S. degree in Economics while the College of Arts and Sciences has continued to grant the A.B. degree in this field.

The course of study leading to the B.S. degree is aimed primarily at preparing the student for a career as an economist in business or government. Consequently, the student selecting this program is required to complete courses in business administration, as well as courses in economics. About one-half of his upper-division electives must be taken in courses offered by the College of Commerce.

The program leading to the A.B. degree in Economics is designed for students who wish to continue fundamental training in economics with a liberal arts education. Of the total of 128 hours required for graduation, 30 or more credit hours are available for elective subjects. There are two principal requirements which apply to the A.B. program, but do not apply to the B.S. program. These are the requirements that the student must complete 12 hours in a foreign language and 9 upper-division hours in a minor field other than economics.

A candidate for the A.B. degree with a major in Economics must complete a minimum of 128 semester hours for graduation. English 0 and Mathematics 2, if taken, may not be counted in this total, and required courses in Physical Education and required courses in basic Military Science or Air Force Aerospace Studies may be counted only to the extent of 4 hours. He must also complete at least 27 semester hours in upper-division economics courses. A minimum of 58 semester hours must be completed in the upper-division level. Of these, not less than 9 upper-division hours must be earned in a minor field approved by the candidate's adviser.

Lower-Division Program

The curriculum of the lower division is designed to provide a background for the study of Economics. The following courses are required and students are expected to complete them within the first two years in residence at the University:

FIRST YEAR	Hr.	SECOND YEAR	Hr.
English 1 and 2—Composition	6	Economics 51 and 52—Principles	6
Foreign Language	6	Foreign Language	6
Hist. 1 and 2—World Civilization or Humanities 1 and 2	6	History 52 and 53—American History or Pol. Sci. 2 and 120	6
Laboratory Science*	8	Mathematics 3—College Algebra	3
Mil. Sci. or A.S. 1 and 2	4	Mathematics 8—Finite Mathematics	3
Phys. Ed.—General Program	2	Mil. Sci. or A.S. 3 and 4	4
Electives—Women**	3	Phys. Ed.—Women's Program	2
		Speech 11—Oral Communication	3
		Electives—Men**	5
		Electives—Women**	7
TOTAL	31-32	TOTAL	36

*A laboratory science may be chosen from among biology, botany, chemistry, geology, physics, physical science, or zoology.

**Electives must be taken during the four-year program to satisfy the University Core Curriculum Requirements. See page 48 for a complete explanation of requirements.

Upper-Division Program

An Economics major must complete a minimum of 27 upper-divison hours in Economics, including the following courses:

Econ. 130—Money and Banking
Econ. 125—Statistics
Econ. 211—Micro Economic Analysis
Econ. 212—Macro Economic Analysis
Econ. 216—History of Economic Thought
Econ. 241—Public Finance

Thus, in addition to the above required courses, the candidate must complete a minimum of 9 semester hours of upper-division elective courses in Economics.

Courses of Instruction*

Lower Division

51. **Principles of Economics.** I, II. 3 hr. PR: Sophomore standing. Principles of resource allocation, income, output and price determination under different competitive conditions; money, banking, and monetary policy; national income, unemployment, and fiscal policy; taxation and government spending; international economics, underdeveloped areas, and comparative economic systems.

52. **Principles of Economics.** I, II. 3 hr. PR: Econ. 51. Continuation of Econ. 51.

Upper Division

125. **Statistics.** I, II. 3 hr. PR: Math. 3. Basic statistical methods employed in collection, presentation, analysis, and interpretation of business and economic data, such as analysis of frequency distribution, time series, inference, index numbers, and correlation.

130. **Money and Banking.** I, II. 3 hr. Our system of monetary and banking arrangements, viewed in relation to functioning of the economic system as a whole.

160. **Labor Economics.** I, II. 3 hr. Introduction to labor economics and labor relations in industry, including the interaction of economic forces, union policies, personnel practices, and labor law.

*Economics 52 is a prerequisite to all upper-division courses in Economics.

205. **Current Economic Problems.** S. 3 hr. PR: Econ. 51 and 52 or consent. Education majors only. A course designed to acquaint public school teachers with reliable source material in economics and to instruct them in studying current economic problems.

210. **Comparative Economic Systems.** I or II. 3 hr. Structure and processes of existing economic systems throughout the world including review of basic principles of free enterprise, socialistic, communistic, and fascistic societies. Comprehensive analysis based on current and recent experiments in these economies.

211. **Micro Economic Analysis.** I. 3 hr. Study of price and output determination and resource allocation in the firm under various competitive conditions.

212. **Macro Economic Analysis.** II. 3 hr. Analysis of the forces which determine the level of income, employment, and output. Particular attention is given to consumer behavior, investment determination, and government fiscal policy.

213. **Economic Development.** I or II. 3 hr. Comprehensive study of the problems, changes, and principal policy issues faced by non-industrialized countries in the process of economic development.

216. **History of Economic Thought.** II. 3 hr. Economic ideas in perspective of historic development.

220. **Introduction to Quantitative Analysis.** I or II. 3 hr. PR: Econ. 125. Study of the principal methematical techniques employed in economic anaylsis; and introduction to econometrics.

226. **Advanced Statistics.** II. 3 hr. PR: Econ. 125 or equiv. Advanced approach to statistical analysis with emphasis on probability, inference, and multivaried statistical techniques.

230. **Public Utilities.** II. 3 hr. Development of regulation; economics of valuation and rate making.

235. **Economic Growth and Fluctuations.** I or II. 3 hr. PR: Econ. 125 or consent. Industrial fluctuations; causes and possible remedies.

241. **Public Finance.** I. 3 hr. Governmental fiscal organizations and policy; taxes and tax systems with particular emphasis upon the Federal Government and the State of West Virginia.

245. **Government and Business.** I or II. 3 hr. Government in its role of adviser and umpire; analysis of governmental policies and practices affecting business.

246. **Transportation.** I. 3 hr. Development of an inland transportation system and relations and policies of transport agencies.

250. **International Economics.** I or II. 3 hr. Development of trade among nations; theories of trade; policies, physical factors, trends, and barriers in international economics.

255. **Regional Economics.** I or II. 3 hr. Analysis of the factors that promote or deter the economic growth of a region, with emphasis on such matters as population shifts, economic base studies, industrial location analyses, input-output techniques, regional income estimation, local multiplier and cycle concepts, and the role of government in regional growth.

261. **Trade Unionism.** I or II. 3 hr. PR: Econ. 160 or consent. Analysis of the structure, government, attitudes, and policies of organized labor; the implications of union policy.

262. **Collective Bargaining.** I or II. 3 hr. PR: Econ. 160 or consent. Theory and practice of collective bargaining; including contract issues, types of relationships, and the role of government policy.

263. **Economics of Wages.** I or II. 3 hr. PR: Econ. 160 or consent. Determination of wage levels and structure; functioning and organization of labor markets.

ENGLISH LANGUAGE AND LITERATURE

A student who expects to major in English should complete lower-division survey courses in English and American literature (English 3, 4, 5, and 6). These courses, however are not absolute prerequisites to entrance into the program of major studies in English. If a student who is accepted as a major has not had the lower-division survey courses, he will be expected to compensate for this deficiency by taking certain upper-division courses that will be suggested by the departmental adviser.

Advisers of upper-division students who are not English majors may schedule them for English courses in the "100" series without regard to prerequisites. In order to qualify for registration in a course in the "200" series, a student is expected to have had prior work in upper-division courses.

Choice of Two Majors in English

The requirements outlined in groups A, B, and C (below) are minimal. The English major is expected to complete a minimum of 42 hours in English exclusive of English 1 and 2.

The prescribed upper-divison program for majors in English requires the student to complete courses in both English literature and American literature and allows him to determine the relative emphasis he will give to each. Three upper-division courses (Group "A") are required of all majors. Credit for this group is 9 hours. Twelve additional hours are chosen from groups "B" and "C" according to the student's desire to emphasize English literature or American literature.

GROUP A (9 hr. required of all English majors):

1. English 142. Shakespeare. 3 hr.
2. English 234. Chaucer. 3 hr.
3. English 230. History of the English Language. 3 hr.

Choice of twelve additional hours of upper-division work, as follows:
Emphasis on English Literature: 9 hr. from Group B; 3 hr. from Group C.
Emphasis on American Literature: 3 hr. from Group B; 9 hr. from Group C.

GROUP B:

1. English 138. English Literature, 1660-1744. 3 hr.
2. English 139. English Literature, 1744-1798. 3 hr.
3. English 140. Elizabethan Poetry and Prose. 3 hr.
4. English 141. Literature of the 17th Century. 3 hr.
5. English 249. The Romantic Movement. 3 hr.
6. English 257. Victorian Poetry. 3 hr.
7. English 258. Victorian Prose. 3 hr.

The departmental adviser may allow the substitution of certain cognate period courses in English literature for any of those listed in this group; namely, courses in the literature of the Early English period, the Middle Ages, the 16th, 17th, 18th, 19th, and 20th centuries.

GROUP C:

1. English 166. American Fiction. 3 hr.
2. English 239. Southern Writers. 3 hr.
3. English 250. American Romanticism. 3 hr.
4. English 270. American Poetry. 3 hr.

English majors are strongly advised to study a second foreign language. For the first choice of a foreign language, the Department recommends French or German.

History 106 and 107 (British Civilization) are required of English majors. Courses in English Social History (204, 205) may be substituted for this requirement by permission of the departmental adviser.

Honors Program

At the beginning of the second semester of his junior year, an English major who has achieved an overall grade-point average of 3.0 or better, and whose record in English studies is above 3.0, may apply for admission to the Honors Program of the Department.

Suggested Semester Programs
(Not of Teacher-trainees)

The following course programs for the A.B. degree will satisfy requirements of the College of Arts and Sciences and the Department of English. The student may find it necessary to rearrange the order in which certain of the requirements are listed.

FIRST YEAR				SECOND YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3	English 3 or 5	3	English 4 or 6	3
English 3 or 5	3	English 4 or 6	3	For. Lang.	3	For. Lang.	3
For. Lang.	3	For. Lang.	3	Core "C"	3-4	Complete Core "C"	3
Science (Core Group "C")	3-4	Science (Core "C")	3-4	History 52 (Core "B")	3	Cimplete Core "B"	3
History 1 (Core Group "B")	3	History 2 (Core "B")	3	Course preliminary to *Minor* Subject	3	English *(or minor subject)*	3
	15-16		15-16		15-16		15-16
Add Phys. Ed., Mil. Sci.		Add Phys. Ed., Mil. Sci.		Add Phys. Ed., Mil. Sci.		Add Phys. Ed., Mil. Sci.	

THIRD AND FOURTH YEARS

The student will complete English 142, 230, and 234; courses to satisfy 12 hours chosen from English groups "B" and "C" shown above; additional English courses to make a minimum of 42 hours exclusive of English 1 and 2; twelve hours of upper-division work in a chosen minor subject; History 105 and 106 (or History 204, 205); electives necessary to complete required hours for the A.B. degree.

Teacher Certification for English Majors

Through careful planning, a student may within four years combine studies leading to the A.B. degree in the College of Arts and Sciences, with major in English, and certification for teaching English in the secondary schools. Students interested in this combination should call at the English office for a special mimeographed summary of the requirements for teacher certification as correlated with the requirements of the College of Arts and Sciences and the Department of English.

Lower-division students preparing for certification as English teachers, with the A.B. degree in English, should be especially careful to enroll for a foreign language in addition to courses in the general-education program for teacher trainees.

In order to complete the **English Major** and requirements for teacher certification in four years, the student must choose the Language Arts (comprehensive) teaching field. Otherwise, he will have to complete the English teaching field AND one other field. If the student wishes to attend summer school, or to take an extra year, he may qualify in two fields: English and one other. For requirements in various fields, see the bulletin on teacher certification programs.

Special notice should be taken of the fact that a lower-division student preparing for teacher certification should take English 3, 4, 5, and 6, **not** English 35 and 36, or 127 and 128. He should take English 111, **not** English 18.

Suggested Semester Programs

(Four-year course for teacher trainees)

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Foreign Lang.	3	Foreign Lang.	3
Hist. 1	3	Hist. 2	3
Biology 1 *or* Phys. Sci. 1	4	Biology 2 *or* Phys. Sci. 2	4
English 3	3	English 4	3
	16		16
Add Mil. Sci. and Phys. Ed.		Add Mil. Sci. and Phys. Ed.	

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 5	3	English 6	3
Art 30	3	Music 10	3
Math. 21	3	Math. 22	3
Speech 3 or 11 *or* Drama 50	3	Drama 75	3
Foreign Lang.	3	Foreign Lang.	3
Soc. Sci. 1	3	Soc. Sci. 2	3
	18		18
Add Mil. Sci. and Phys. Ed.		Add Mil. Sci. and Phys. Ed.	

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 142	3	English 139 *or* 141, 166, 250, 270	3
English 138 *or* English 140	3	English 111	3
Speech 121	3	Drama 180	3
Hist. 106	3	Hist. 107	3
Educ. 100, 105	4	Educ. 106	3
Journ. 18	3		
	19		18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 234	3	Educ. 120	4
Journ. 215	3	Educ. 124	6
Educ. 109 *or* 221	3	Educ. 161	2
Speech	3	English 230	3
English	3		
English 118, 278, 280	3		
	18		15

The student may do well to re-arrange the course patterns in order to do his student teaching during the first semester of the senior year.

Courses of Instruction

Lower Division

0. **English Composition.** I, II. 3 hr. Required of all students who fail to qualify for English 1 under University regulations.

1. **Composition and Rhetoric.** I, II. 3 hr. Required of all candidates for the bachelor's degree in all colleges except for certain students of superior achievement who may be exempted from the requirement under regulations prevailing at the time of admission. Advanced sections are provided for students who made exceptionally high grades on the entrance tests in English.

2. **Composition and Rhetoric.** I, II. 3 hr. Required of all candidates for the bachelor's degree in all colleges unless the requirement for certain students of superior achievement is waived under regulations announced for the year of admission. Advanced sections are provided for students who made exceptionally high grades on the entrance tests in English.

3. **Survey: English Literature.** I, II. 3 hr. English authors from Beowulf to Burns and readings from their works. Upperclassmen may substitute English 163 for this course.

4. **Survey: English Literature.** I, II. 3 hr. English authors from Robert Burns to the present and readings from their works. Upperclassmen may substitute English 164 for this course.

5. **American Literature.** I, II. 3 hr. American authors to 1870 with readings from their works.

6. **American Literature.** I, II. 3 hr. American poetry and prose from 1870 to the present. Continuation of English 5.

18. **Advanced English Composition** (Written and Spoken). I, II. 3 hr. PR: English 1 and 2. Practice in the organization of thought and in the correct and effective use of the language in writing and speaking, with emphasis on the various types and techniques of exposition.

25. **Introduction to Poetry.** I, II. 3 hr. Nontechnical approach to poems selected for their intrinsic interest and ease of comprehension.

26. **Introduction to Fiction.** I, II. 3 hr. Companion course to English 25 and English 27 in the reading of works of fiction selected for their interest and significance to the general reader. Emphasis on appreciation and enjoyment.

27. **Introduction to Drama.** I, II. 3 hr. How to read, enjoy, and judge significant plays. Designed for the general student, not the specialist, with a view to developing a lasting interest in dramatic literature.

35. **Types of Literature.** I, II. 3 hr. Selected works of English, American and world authors, read for appreciation and enjoyment. Poetry and drama emphasized. Designed particularly to satisfy Core Curriculum requirements.

36. **Types of Literature.** I, II. 3 hr. Continuation of English 35, with emphasis on examples of prose fiction by English, American, and European writers. May be taken independently of English 35.

Upper Division

100. **Honors Course.** I, II. 3 hr. Independent reading and study. For students admitted to the Honors Program in the second semester of their junior year.

111. **The English Language.** I, II. 3 hr. Structure of the English language. Linguistic study designed especially for teachers of English in the secondary schools. Required of all teacher trainees preparing for certification in English or Language Arts.

115. **Creative Writing: Narration (Short Story).** II. 3 hr. Purpose and pattern of the modern short story; study of examples in the curent periodicals; special assignments and conferences with individual students on a minimum number of short stories.

123. **Business English.** I, II. 3 hr. PR: English 18. Technical writing; assembling and analysis of economic and commercial data; writing of reports; business correspondence. Primarily for students enrolled in the College of Commerce.

126. **Advanced Composition.** I, II. 3 hr. Technical forms of writing; designed particularly for students in science and engineering.

127. **Introduction to Literature (Part I).** I, II. 3 hr. Poetry and drama, read for understanding and enjoyment. A core-curriculum course comparable to English 35, for upper-division students. Should not be taken in addition to English 35.

128. **Introduction to Literature. (Part II).** I, II. 3 hr. A core-curriculum course comparable to English 36. Prose fiction: stories and novels. For upper-division students. Should not be taken in addition to English 36.

129. **Words and Usage.** II. 3 hr. Practical vocabulary building, English grammar and usage. Attention is given to the derivation, history, and meaning of words, and to the principles of syntax and grammar.

138. **English Literature, 1660-1744.** I. 3 hr. Literature from the Restoration to the death of Pope, exclusive of the drama.

139. **English Literature, 1744-1798.** II. 3 hr. Literature from the death of Pope to the publication of Wordsworth's **Lyrical Ballads**, exclusive of the drama.

140. **Elizabethan Poetry and Prose.** I. 3 hr. The Renaissance in England as manifested in the great variety of nondramatic literary works of the sixteenth century, with emphasis on the major writers of the reign of Elizabeth I.

141. **Literature of the 17th Century.** II. 3 hr. Major poets and prose writers of the 17th century, with the exception of dramatic writings.

142. **Shakespeare.** I, II. 3 hr. Twelve of Shakespeare's most important plays.

160. **Contemporary Literature.** I. 3 hr. Modern British and American poets and prose writers—including novelists, short-story writers, dramatists, and essayists. Chronology is roughly from 1900 to 1925.

161. **Contemporary Literature.** II. 3 hr. Continuation of English 160 from approximately 1925 to the present time.

163. **English Literature.** I, II. 3 hr. Survey: English Literature from the beginning to 1800. May be substituted for English 3 but may not be elected by students who already have credit for English 3.

164. **English Literature.** I, II. 3 hr. Continuation of English 163 from 1800 to present. May be substituted for English 4 but may not be elected by students who already have credit for English 4.

166. **American Fiction.** I, II. 3 hr. The reading of ten or more of the most important American novels from Hawthorne to the present day, each considered as a work of art reflecting a significant view of life. Lectures on the works of principal authors, with class discussion of particular books.

173. **Poetry.** I, II. 3 hr. Appreciation and enjoyment of poems through critical and analytical reading. Studies in the various types of poetry, and of the language, imagery, and techniques of poetic expression.

180. **Bible Literature: Old Testament.** I. 3 hr. The various types of literature exemplified in the Old Testament, read for their intrinsic merit and for their historical and cultural significance. Continued in English 181.

181. **Bible Literature: New Testament and Apocrypha.** II. 3 hr. The contents of the New Testament, its literary quality, with consideration of its historical relations and of the relationships of the several writers represented. Because of the difficulty of treating the wealth of materials of the Old Testament during the one semester of English 180, the first part of this course will be devoted to continuation of the study of certain books of the Old Testament.

198. **Honors Course.** I, II. 3 hr. For the first semester of the senior year of students admitted to the Honors Program.

199. **Honors Course.** I, II. 3 hr. For students in the Honors Program; final semester of senior year.

222. **Modern American Biography.** I. 3 hr. A selection of the most significant and interesting biographies and autobiographies of Americans of distinction in literature, the arts, and public life.

223. **Modern British Biography.** II. 3 hr. Representative works by such eminent masters of biography as Lytton Strachey, Sir Osbert Sitwell, Lord David Cecil, Sean O'Casey, Hugh Kingsmill, and others.

224. **Literary Criticism.** II. 3 hr. The history of literary criticism from Aristotle to modern times.

225. **Recent Literary Criticism.** I, II. 3 hr. A brief survey of the theories and essays of four major schools of modern criticism and an application of these theories to a novel, a play, and to selected poems and short stories.

228. **Structure of the English Language.** I, II. 3 hr. A course in historical, comparative, and descriptive grammar, together with an introduction to English linguistics.

230. **History of the English Language.** I. 3 hr. A study of the nature of the language; questions of origins, language families, development, relationships of English as one of the Indo-European languages.

231. **Old English (I).** I. 3 hr. A study of Anglo-Saxon with selected readings from the literature of the period.

232. **Old English (II).** II. 3 hr. PR: English 231. **Beowulf** and other texts in Old English.

234. **Chaucer.** I. 3 hr. Early poems, **Troilus and Criseyde,** and **The Canterbury Tales.** In addition to an understanding and appreciation of Chaucer's works, the student is expected to acquire an adequate knowledge of Chaucer's language.

235. **Shakespeare.** I. 3 hr. Intensive study of selected plays. Special attention to textual problems and to language and poetic imagery, together with the history of Shakespearean criticism and scholarship.

236. **Shakespearean Comedies and History Plays.** I. 3 hr. A study of representative comedies of Shakespeare against the background of classical and Renaissance theory and practice, and of selected history plays.

237. **Shakespearean Tragedy.** II. 3 hr. A study of the principal tragedies of Shakespeare, together with the history of criticism, scholarly investigation, and interpretation.

239. **Southern Writers.** II. 3 hr. Examination of twentieth-century Southern essayists, poets, short-story writers, and novelists in relation to the ideological background.

242. **Literature for Teachers.** S. 3 hr. Study and appreciation of selected works of American authors, with special reference to the high-school curriculum. Given usually in the Summer Session.

243. **Literature for Teachers.** S. 3 hr. Study and appreciation of selected works of English authors. Recommended for teachers of high-school English. Given usually in the Summer Session.

244. **Sixteenth Century Prose and Poetry.** I. 3 hr. Studies from Caxton to Bacon, from Skelton to Shakespeare.

245. **Seventeenth Century Prose and Poetry.** II. 3 hr. Studies from Donne to Dryden.

247. **Literature of the Eighteenth Century.** I. 3 hr. Literature of the period 1700-1750, studied in relation to the social, political, and religious movements of the time.

248. **Literature of the Eighteenth Century.** II. 3 hr. Continuation of English 247, covering the latter half of the century. May be taken independently of English 247.

249. **The Romantic Movement.** I. 3 hr. The works of Wordsworth, Coleridge, and Keats, together with an introduction to works of scholarship in the field of English Romanticism.

250. **American Romanticism.** II. 3 hr. The writings of Ralph Waldo Emerson, Henry David Thoreau, and Nathaniel Hawthorne. A study of the relations of these men to the history of their own time, and of their contributions to American thought and art.

252. **English Literature, 1880-1918.** 3 hr. A study of the more important writers and literary movements of the late Victorian and the Edwardian periods with emphasis on Hardy, Housman, Hopkins, Henley, Pater, Gissing, Moore, Butler, and the writers of the "Aesthetic movement".

253. **Early English Drama.** I. 3 hr. A study of the medieval and early Tudor drama, to the age of Shakespeare.

254. **Elizabethan Drama.** II. 3 hr. A study of the dramas of Shakespeare's contemporaries and successors to the closing of the theatres in 1642. Includes Kyd, Marlowe, Peele, Greene, Jonson, Heywood, Marston, Chapman, Webster, Beaumont and Fletcher, Massinger, Ford, and Shirley.

255. **Restoration and Eighteenth Century Drama.** II. 3 hr. Comedy, tragedy, the heroic play, the drama of sensibility and the reaction against it: Etherege, Wycherley, Farquhar, Congreve, Vanbrugh, Dryden, Otway, Goldsmith, and Sheridan.

256. **Modern Drama.** II. 3 hr. A study of world drama from Ibsen to the present day.

257. **Victorian Poetry.** I. 3 hr. A study of the major Victorian poets—Tennyson, Browning, Arnold, Rossetti, Morris, Swinburne, and Fitzgerald, and a few of the later Victorian poets.

258. **Victorian Prose.** II. 3 hr. A study of the non-fictional writings of the great Victorian prose crities: Carlyle, Ruskin, Arnold, Newman, Macaulay, Huxley, and Morris.

261. **American Drama.** I. 3 hr. A study of representative American dramas and of the history of the theatre in America.

262. **Study of Selected Authors. (American).** I, II. 3 hr. A study of the works of a principal American author, or more than one, as announced when the course is scheduled.

263. **Study of Selected Authors (English).** I, II. 3 hr. Study of the works of one or more of the principal authors, as announced in the schedule when the course is listed.

264. **Spenser.** I. 3 hr. A study of Spenser's poetry, minor poems, and **The Faerie Queene**, forms and sources, purpose of the great epic, social, political, and religious allegory.

265. **Byron and Shelley.** II. 3 hr. Reading and study of the works of two poets of the later Romantic Movement, together with works of criticism and scholarship related to the period.

267. **Milton.** II. 3 hr. A study of all of Milton's poems and a few selected prose works.

270. **American Poetry.** I. 3 hr. A study of the major American poets of the nineteenth and twentieth centuries—Bryant, Poe, Emerson, Longfellow, Whitman, Dickinson, Frost, Eliot. Primary emphasis on their poetry as poetry; background materials minimized.

272. **Folk Literature.** II. 3 hr. A study of the folk ballad, its origin, history, and literary significance, based on Child's collection and on American ballad collections.

275. **The English Novel to the Time of Scott.** I. 3 hr. A study of the English novel from the sixteenth century to the time of Scott, showing the development of the novelistic art from early narrative beginnings.

276. **The English Novel, 1832-1900.** II. 3 hr. A continuation of English 275. The development of the English novel from the early nineteenth century to the beginning of the twentieth century.

278. **Tragedy.** II. 3 hr. Masterpieces of tragedy from Greek times to modern, with consideration of the changing concepts of tragedy and of the ethical and ideological values reflected in the works of major tragic authors.

280. **The Modern Novel.** I. 3 hr. The twentieth-century novel, with emphasis upon the works of selected British novelists.

282. **Modern British Poetry.** I. 3 hr. A survey of British poetry from 1890 to the present, including the Decadents, Counter-Decadents, Hopkins, Housman, Hardy, the Georgians, the Imagists, and war poets; Yeats, Eliot, the Auden Group, and the post-World War II poets.

291. **Introduction to Literary Research.** I, II. 3 hr. Bibliography; materials and tools of literary investigation; methods of research in various fields of literary history and interpretation; problems of editing. Practical guidance in the writing of theses.

FAMILY RESOURCES (Formerly Home Economics)

Purpose

The curriculum in the Division of Family Resources is designed to provide a professional education for persons expecting to work directly or indirectly with families in improving the quality of their living. The purpose of home economics is to assist individuals and families in developing satisfying relationships within the family and between the family and other social institutions. It contributes to the creation of a physical environment conducive to the development of human resources. Home economists work through existing economic and social organizations to encourage the improvement of goods and services used by consumers and to provide leadership in teaching people to develop competence in meeting their changing needs.

Careers

Home economists find professional opportunities in education, business, and public service. They may work directly with families; specific age groups such as children, youth or aged; or individual consumers; and indirectly through educational programs in various communication media (radio, television, journalism). Home economists are employed as teachers, nursery school supervisors, extension workers, 4-H Club agents, YWCA workers, dietitians, home service representatives, social welfare workers, radio and television programmers, interior designers, fashion coordinators, and buyers. Increasingly their competencies are being sought by international agencies for services in cultural and educational exchange programs such as the Peace Corps.

Requirements for the Degree

Students have the choice of four options toward a degree in home economics: social science emphasis, physical science emphasis, art emphasis, or general. The degree granted is a bachelor of arts. Students may also pursue a bachelor of science degree with a major in home economics by fulfilling the requirements as set forth in the College of Human Resources and Education section of this bulletin.

Minimum hours in Home Economics	36
Total hours in other areas	80
Electives	12
GRAND TOTAL HOURS	128

REQUIRED COURSES

I. University Core	TOTAL	46 hr.
II. Home Economics Professional Core		
1. Child Development and Family Relations 114		3 hr.
2. Clothing and Textiles 2 or 102		3 hr.
3. Food and Nutrition 1 or 135		3 hr.
4. Home Management and Family Econ. 210 or 230		3 hr.
5. Housing and Design		3 hr.
	TOTAL	15 hr.
III. Options		
a. Social Science emphasis		
1. Additional courses in social science areas		12 hr.
2. Additional courses in child development and family relations, home management, and family economics areas		14 hr.
3. Electives		41 hr.
	TOTAL	67 hr.
b. Physical Science emphasis		
1. Additional courses in physical sciences, work in at least two fields		12 hr.
a. Biology, bacteriology, zoology, genetics		
b. Chemistry		
c. Mathematics, statistics, physics		
2. Additional courses in foods and nutrition		15 hr.
3. Speech		3 hr.
4. Electives		37 hr.
	TOTAL	67 hr.
c. Art emphasis		
1. Additional courses in at least two of the following areas:		21 hr.
a. Accounting, marketing, journalism		
b. Art		
c. Psychology, sociology, history		
2. Additional courses in clothing and textiles and housing and design areas		15 hr.
3. Speech		3 hr.
4. Electives		28 hr.
	TOTAL	67 hr.
d. General—Those wishing a Vocational Home Economics teaching certificate must have at least 8 hours in each area of home economics in addition to the general and professional education requirements. (See College of Human Resources and Education section for details.)		
1. One additional 3 hour course in each area plus 6 hours of electives in home economics		21 hr.
2. Electives		46 hr.
	TOTAL	67 hr.

Suggested Home Economics Curriculum

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Phys. Ed.	1	Phys. Ed.	1
Foreign language	3	Foreign language	3
Univ. Core B	3	Univ. Core B	3
Univ. Core C	3	Univ. Core C	3
H.Ec. Core, FN 1, TC 2, or HD 3	3	H.Ec. Core, FN 1, TC 2, or HD 3	3
	16		16

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Phys. Ed.	1	Phys. Ed.	1
Core Group A (Foreign language)	3	Core Group A (Foreign language)	3
H.Ec.—(FN 15, TC 17, HD 23)	3	Univ. courses in H.Ec. Option	9
Univ. courses in H.Ec. Option	6	Univ. Core B or C	3
Univ. Core B or C	3		
	16		16

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
H.Ec. (100 level courses)	6	H.Ec. (100 level courses)	6
H.Ec. Core (TC 102, CDRF 114, FN 135)	3	H.Ec. Core (TC 102, CDRF 114, FN 135)	3
Univ. courses in H.Ec. Option	3	Univ. courses in H.Ec. Option	3
Univ. Core A*	3	Univ. Core B or C	3
Electives	1-3	Electives	1-3
	16-18		16-18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Univ. Core B or C	3	H.Ec.	6
H.Ec. Core (HMFE 210 or 230)	3	Electives**	10-12
Electives**	10-12		
	16-18		16-18

*If two years of foreign languages were taken.
**To be chosen in consultation with adviser to fit the student's professional goals.

Laboratory Fees

A non-refundable fee is required of all students who take the following laboratory courses in Home Economics:

Course	*Per Semester*
Food and Nutrition 15	$ 5.00
Food and Nutrition 115	10.00
Food and Nutrition 205	$ 5.00
Home Mgmt. and Fam. Econ. 120	5.00
Home Mgmt. and Fam. Econ. 230	5.00

Courses of Instruction

Food and Nutrition

FN

1. **Elementary Nutrition.** I, II. 3 hr. Essentials of adequate diet; applications are made with particular reference to needs of college students.

15. **Food Selection and Preparation.** I, II. 3 hr. PR: 8 hr. of a laboratory science. (2 lec., 1 lab.). Basic principles of food selection, care, and preparation. Emphasis on the chemical and physical properties of foods and reactions which occur during processing.

108. **Quantity Cookery.** II. 3 hr. PR: FN 115. (1 lec., two 3-hr. labs. arranged). Application of principles to preparation of food in large quantities. Use of standardized formulae, calculation of costs, and use of institution equipment. Field trip included. Offered alternate odd years.

115. **Meal Planning, Preparation, and Service.** I, II. 3 hr. PR: FN 15 or consent. (1 lec., 3-hr. lab.). Selection and purchase of foods; planning, preparing, and serving meals with emphasis on time, energy, and money management.

128. **Institutional Buying.** I. 2 hr. PR: FN 108. Producing areas, distribution of food products, specifications, storage, and food practices in quantity buying. Observation in local wholesale markets, warehouses, and storage units. Offered in alternate odd years. Tour of market facilities in Pittsburgh area required.

135. **Food and People.** I. 3 hr. The cultural, social, ethnic, and economic problems involved in feeding families.

138. **Institutional Organization and Management.** II. 3 hr. PR: FN 108. Principles of organization and management of food service. Field trip included. Offered alternate even years.

148. **Laboratory Practice in Institution Management.** I, II. 2 hr. PR: FN 138 and consent. Experience under supervision in planning, preparing, and serving food in an institution. Selection of place and type of experience to be determined by needs of students.

201. **Diet Therapy.** II. 3 hr. PR: FN 101, Zool. 271. Adaptations of normal diet for diseases whose prevention or treatment is largely influenced by diet. Offered in alternate odd years.

205. **Experimental Cookery.** II. 3 hr. PR: FN 15, Chem. 131 or consent. (1 hr. lec., 2 2-hr. labs.). Utensils, ingredients, temperature, manipulation, and cooking methods as they affect quality of cooked products. Offered in alternate odd years.

211. **Readings in Nutrition.** II, S. 1-4 hr. PR: FN 241 or consent. Review of current literature and of present research. Topics depend upon needs and interest of class members.

221. **Family and Community Nutrition.** II. 3 hr. PR: Consent. Special emphasis is given to nutritional status of the individual and family in the community. Students study nutritional problems and work toward their solutions through fieldwork.

241. **Nutrition.** I. 3 hr. PR: One course in Nutrition, Biochemistry, and Physiology. The role of food nutrients in the physiological and biochemical processes of the body; nutritional needs of healthy individuals under ordinary conditions and in periods of physiologic stress. Offered alternate even years.

281. **Problems in Nutrition and/or Diet Therapy.** 1-4 hr. PR: Written consent of instructor.

285. **Problems in Foods.** 1-4 hr. PR: Written consent of instructor.

288. **Problems in Institutional Management.** 1-4 hr. PR: Written consent of instructor.

Textiles and Clothing

TC

2. **Principles of Clothing Construction.** I, II. 3 hr. (Three 2-hr. periods per week). Basic principles of clothing construction including pattern alteration and fitting.

17. **Textiles.** I, II. 3 hr. (2 lec., 1 lab.). Textile fibers and fabrics studied with view to their use in dress and in the home. Characteristics of the major fibers and their suitability to various uses. Study of standard and novelty materials with emphasis on appropriate use and care.

102. **Clothing for the Family.** I. 3 hr. (3 lectures). Clothing for the family in relation to the social, psychological, and economic factors, including a study of the clothing industry, trends, and cultural significance. Field trip included.

212. **Advanced Clothing Construction.** I. 2 hr. PR: TC 232 or consent. Offers opportunity for creative expression and for understanding of pattern design through handling of fabrics on dress form. Costumes are designed, draped, and constructed.

217. **Textiles for Consumers.** I. 3 hr. PR: TC 17. Acquaints students with the regulations, marketing channels, information sources, and new developments relevant to the selection of fabrics for household uses and wearing apparel. Discussion of current literature as it relates to buying fabrics for use in clothing and home furnishing.

222. **Tailoring.** I, II. 3 hr. PR: TC 2, 17. Tailoring of suits and coats. Emphasis placed on professional techniques, advanced fitting, and construction of garments. Second garment constructed by fast method techniques.

232. **Costume Design.** II. 2 hr. PR: TC 2, 17. Techniques of figure and fashion drawing. Designing for individuals of various types and ages. Some history of costume included.

282. **Problems in Clothing.** 1-4 hr. PR: Written consent of instructor.

287. **Problems in Textiles.** 1-4 hr. PR: Written consent of instructor.

Housing and Design

HD

3. **Introduction to Related Art.** I, II. 3 hr. The use of the design elements and the application of the design principles to stimulate imagination and creative ability and to develop discriminating judgment in selection and arrangement of materials used for the individual and the home.

23. **Housing Design.** I, II. 3 hr. PR: HD 3 or consent. Housing and home planning as they relate to family living. Selection, arrangement, and use of the interior and exterior space for activities carried on, in, and around the home.

123. **Interior Design.** I. 3 hr. PR: HD 23 or consent. (2 lec., 1 lab.). The practical and aesthetic aspects of coordinating the furnishings, background, accessories, lighting, and space of a house for family living.

223. **Advanced Interior Design.** II. 3 hr. PR: HD 23, 123 or consent. Technical and design information necessary to comprehend and function within the contemporary home furnishings market.

283. **Problems in Housing and/or Design.** 1-4 hr. PR: Written consent of instructor.

Child Development and Family Relations

CDFR

106. **Child Development.** I, II. 3 hr. PR: Psych. 1 or 3, or Ed. 105 or consent. (2 lec. and 1 2-hr. lab. arranged.) Principles of development during childhood including physical, psychological, and social factors affecting behavior. Observation and participation in the University Nursery School.

114. **Family Relations.** I, II. 3 hr. Introductory course in the study of marriage and the family. Attention is placed particularly on mate selection, the interplay of social roles in family relations, and problems of decision-making and adjustment arising out of the demands of the contemporary social setting.

126. **Infant Development.** I. 2 hr. (1 lec., 1 lab.). Development characteristics and problems during the prenatal period and the first eighteen months with implications for guidance and care.

224. **Family and the Individual in the Community.** I. 3 hr. PR: One course in the family, or sociology, or consent. Social psychological analysis of the individual in the family and in other social systems. Involves the study of role relationships, community processes and attitudes and values as they affect the behavior of the individual.

264. **Family Development.** I, II. 3 hr. PR: CDFR 114 or consent. A professional course designed to prepare students for work with families in their varying stages of development and different socio-economic levels. A comparative study of families using cross-cultural resources; involves intensive study of family relationships as affected by differing stages of the family life cycle, from beginning family through the aging couple. Lecture, discussion, and case studies of families.

266. **Needs of Adolescents.** I, II. 3 hr. Adolescent needs as met by the home with contributions of other agencies such as church, school, and youth groups. Physical, social and integrative needs will be considered from the standpoint of needs of all family members as well as the individual.

276. **Seminar in Child Development.** II. 2 hr. PR: Senior standing and consent. Review and discussion of recent literature pertaining to child development. Offered in alternate years.

284. **Problems in Family Relations.** 1-4 hr. PR: Written consent of instructor.

286. **Problems in Child Development.** 1-4 hr. PR: Written consent of instructor.

Home Management and Family Economics

HMFE

120. **Communication of Consumer Information.** I, II. 2 hr. PR: Minimum of 3 hr. in each of four areas of home economics, or consent. Techniques of communicating ideas and information relative to goods and services available to the consumer. Emphasis upon demonstration techniques.

210. **Family Economics.** I, II. 3 hr. PR: Senior or graduate standing. Management of the family's money resources. Consideration of the economic problems of families, of planned spending and saving, and of the role of the consumer.

220. **Consumer Economics.** I. 3 hr. PR: Econ. 51, HMFE 210 (214), or consent. Course designed to help students understand the role of consumer in our economy. Involves the study of research methods and techniques being used to identify, understand, and solve consumer problems.

230. **Home Management, Principles and Application.** I, II. 3 hr. PR: Upper-division standing. Study and application of management in a variety of situations faced by the family with opportunity to integrate knowledge from other courses.

250. **Household Equipment.** I, II. 2 hr. Selection, arrangement, use and care of equipment for various situations and for different income levels. Lecture, laboratory, and discussion.

280. **Problems in Home Management and/or Family Economics.** 1-4 hr. PR: Written consent of instructor.

Home Economics Education

Ed. 262. **Vocational Home Economics in Secondary Schools.** II. 3 hr. To be taken prior to or parallel with Ed. 124.

HEEd.

209. **Evaluation in Home Economics.** II. 3 hr. PR: 30 hr. of home economics, 7 hr. of Education. Experience in selecting, devising, and using evaluation devices for appraising student progress toward desired goals in home economics. Offered alternate odd years.

219. **Adult Education in Homemaking.** I. 3 hr. PR: 30 hr. of home economics, and 7 hr. of Education. Current trends and present activities. Organization of adult classes; development of unit outlines; consideration of teaching methods; illustrative material and bibliography. Offered alternate even years.

279. **Seminar in Home Economics Education.** I, II, S. 3 hr. PR: Senior standing and 6 hr. of Education. Review and discussion of recent literature pertaining to home economics at the junior and senior high school levels and the college and adult levels based on the history of the home economics movement from the Lake Placid Conference in 1909 to the present time.

Honors Program

100. **Home Economics Honors Program.** 3 hr. PR: Second-semester junior standing; at least two academic years in residence at West Virginia University; overall grade-point average of 3.0 or better; grade point average in home economics courses of 3.20 or better. Individual special problems for undergraduates of second-semester junior standing who show special ability and interest in one of the following fields: child development, home economics education, or nutrition. Admission dependent only upon the recommendation of the adviser and the Honors Course Committee. Hours arranged.

110. **Home Economics Honors Program.** 3 hr. PR: First-semester senior standing; overall grade-point average of 3.0 or better; grade-point average in home economics courses of 3.25 or better, and Home Econ. 100. Individual special problems for undergraduates of first-semester senior standing who show special ability and interest in one of the following fields: child development, home economics education, or nutrition. Admission only upon the recommendation of the adviser and the Honors Course Committee. Hours arranged.

120. **Home Economics Honors Program.** 3 hr. PR: Second-semester senior standing; overall grade-point average of 3.0 or better; grade-point average in home economics courses of 3.25 or better; Home Econ. 110. Individual special problems for undergraduates of second-semester senior standing who show special ability and interest in one of the following fields: child development, home economics education, or nutrition. Admission only upon the recommendation of the adviser and the Honors Course Committee. Hours arranged.

FOREIGN LANGUAGES

The Department offers work in foreign languages, literatures, cultures, and in linguistics. Areas included are French, Spanish, Italian, German, Russian, Latin, Greek, Hebrew, Linguistics, Language Teaching Methods, and Bibliography and Research. A student may be a candidate for an A.B. degree, with a major or minor in French, Spanish, German, Russian, or Latin, or with a minor in Greek. Students whose grades have frequently fallen below "B" in language work in the lower division should not select a foreign language as a major or minor. At least 36 hours of work in a given language constitutes a major and 12 hours of upper-division work a minor. All foreign language majors must take Linguistics 111. In most cases the department recommends that students who major in a foreign language should minor in a second. This is not a requirement, however, and other fields may be offered with the approval of the department chairman. Students who wish to earn professional certificates as elementary or secondary foreign language teachers are advised to consult the College of Human Resources and Education section of this bulletin. Students who have completed two or more years of study of a foreign language in high school can receive no credit towards a degree in the College of Arts and Sciences for either semester of the elementary work in that language.

Major in French

Requirements: French 1 and 2 or equiv., French 3 and 4, 103 and 104, 109, 110, 115, 116, 118, and 231.

Suggested Program:

FIRST YEAR

First Sem.	*Hr.*	*Second Sem*	*Hr.*
French 3*	3	French 4*	3
English 1	3	English 2	3
Humanities 1	3	Humanities 2	3
Electives, Groups A, B, or C	3-7	Electives, Groups A, B, or C	3-7
Phys. Ed.	1	Phys. Ed.	1
Mil. or A.S. 1	2	Mil. or A.S. 2	2
	15-19		15-19

SECOND YEAR

First Sem.	*Hr.*	*Second Sem*	*Hr.*
French 103	3	French 104	3
Minor Subject	3-6	Minor Subject	3-6
Linguistics 111	3	Electives, Groups A, B, or C	3-7
Electives, Groups A, B, or C	3-4	Phys. Ed.	1
Phys. Ed.	1	Mil. or A.S. 4	2
Mil. or A.S. 3	3		
	15-19		15-19

THIRD YEAR

First Sem.	*Hr.*	*Second Sem*	*Hr.*
French 109	3	French 110	3
French 115	3	French 116	3
Minor subject and electives	12	Minor subject and electives	12
	17-18		17-18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem*	*Hr.*
French 118	3	French 231	3
Minor subject and electives	15	Minor subject and electives	15
	17-18		17-18

*If a student has not had French in high school, he will normally take French 1 and 2 in his first year and will take French 3 and 4 concurrently with French 103 and 104 in his second year.

Major in Spanish

Requirements: Spanish 1 and 2 or equiv., Spanish 3 and 4, 103 and 104, 109 110, and 12 hr. of literature courses from the following: Spanish 211, 212, 217, 218, 221, and 222.

Suggested Program:

FIRST YEAR

First Sem.	*Hr.*	*Second Sem*	*Hr.*
Spanish 3*	3	Spanish 4*	3
English 1	3	English 2	3
Humanities 1	3	Humanities 2	3
Electives, Groups A, B, or C	3-7	Electives, Groups A, B, or C	3-7
Phys. Ed.	1	Phys. Ed.	1
Mil. or A.S. 1	2	Mil. or A.S. 2	2
	15-19		15-19

SECOND YEAR

First Sem.	*Hr.*	*Second Sem*	*Hr.*
Spanish 103	3	Spanish 104	3
Minor subject	3-6	Minor subject	3-6
Linguistics 111	3	Electives, Groups A, B, or C	3-7
Electives, Groups A, B, or C	3-7	Phys. Ed.	1
Phys. Ed.	1	Mil. or A.S. 4	2
Mil. or A.S. 3	2		
	15-19		15-19

THIRD YEAR

First Sem.	*Hr.*	*Second Sem*	*Hr.*
Spanish 109	3	Spanish 110	3
Spanish 211 or 217	3	Spanish 212 or 218	3
Minor subject and electives	12	Minor subject and electives	12
	17-18		17-18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem*	*Hr.*
Spanish 221	3	Spanish 222	3
Minor subject and electives	15	Minor subject and electives	15
	17-18		17-18

*If a student has not had Spanish in high school, he will normally take Spanish 1 and 2 in his first year and will take Spanish 3 and 4 concurrently with Spanish 103 and 104 in his second year.

Major in German

Requirements: German 1 and 2 or equiv., German 3 and 4, 103 and 104, 109, 110, and at least 12 hr. of additional upper-division courses in German literature or Germanic linguistics. (See Linguistics 211, 212, 251, 252, 271, 272, 281, and 282.)

Suggested Program:

FIRST YEAR

First Sem.	*Hr.*	*Second Sem*	*Hr.*
German 3*	3	German 4*	3
English 1	3	English 2	3
Humanities 1	3	Humanities 2	3
Electives, Groups A, B, or C	3-7	Electives, Groups A, B, or C	3-7
Phys. Ed.	1	Phys. Ed.	1
Mil. or A.S. 1	2	Mil. or A.S. 2	2
	15-19		15-19

SECOND YEAR

First Sem.	*Hr.*	*Second Sem*	*Hr.*
German 103	3	German 104	3
Minor subject	0-3	Minor subject	0-3
Linguistics 111	3	Electives, Groups A, B, or C	3-7
Electives, Groups A, B, or C	0-4	Phys. Ed.	1
Phys. Ed.	1	Mil. or A.S. 4	2
Mil. or A.S. 3	2		
	15-19		15-19

THIRD YEAR

First Sem.	*Hr.*	*Second Sem*	*Hr.*
German 109	3	German 110	3
German elective	3	German elective	3
Minor subject	6	Minor subject	6
Electives	3-6	Electives	3-6
	15-18		15-18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem*	*Hr.*
German	6	German	3
Electives	9-12	Electives	12-18
	15-18		15-18

*If a student has not had German in high school, he will normally take German 1 and 2 in his first year and will take German 3 and 4 concurrently with German 103 and 104 in his second year.

Major in Russian

Requirements: Russian 1 and 2 or equiv., Russian 3 and 4, 103 and 104, 109, 110, and at least 12 hr. of additional upper-division courses in Russian literature or Russian linguistics (see Linguistics 231).

Suggested Program:

FIRST YEAR

First Sem.	*Hr.*	*Second Sem*	*Hr.*
Russian 3*	3	Russian 4*	3
English 1	3	English 2	3
Humanities 1	3	Humanities 2	3
Electives, Groups A, B, or C	3-7	Electives, Groups A, B, or C	3-7
Phys. Ed.	1	Phys. Ed.	1
Mil. or A.S. 1	2	Mil. or A.S. 2	2
	15-19		15-19

SECOND YEAR

First Sem.	*Hr.*	*Second Sem*	*Hr.*
Russian 103	3	Russian 104	3
Minor subject	3-6	Minor subject	3-6
Linguistics 111	3	Electives, Groups A, B, or C	3-7
Electives, Groups A, B, or C	3-7	Phys. Ed.	1
Phys. Ed.	1	Mil. or A.S. 4	2
Mil. or A.S. 2	2		
	15-19		15-19

THIRD YEAR

First Sem.	*Hr.*	*Second Sem*	*Hr.*
Russian 109	3	Russian 110	3
Russian elective	3	Russian elective	3
Minor subject	6	Minor subject	6
Electives	3-6	Electives	3-6
	15-18		15-18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem*	*Hr.*
Russian	6	Russian	3
Electives	9-12	Electives	12-15
	15-18		15-18

*If a student has not had Russian in high school, he will normally take Russian 1 and 2 in his first year and will take Russian 3 and 4 concurrently with Russian 103 and 104 in his second year.

Major in Latin

Requirements: Latin 1 and 2 or equiv., Latin 3 and 4, 109, 110, 121, 122, and enough upper division courses in Latin literature or Latin linguistics to bring the total college hours to 36.

Suggested Program:

FIRST YEAR

First Sem.	*Hr.*	*Second Sem*	*Hr.*
Latin 3	3	Latin 4	3
English 1	3	English 2	3
Humanities 1	3	Humanities 2	3
Electives, Groups A, B, or C	3-7	Electives, Groups A, B, or C	3-7
Phys. Ed.	1	Phys. Ed.	1
Mil. or A. S. 1	2	Mil. or A.S. 2	2
	15-19		15-19

SECOND YEAR

First Sem.	*Hr.*	*Second Sem*	*Hr.*
Latin elective	3	Latin elective	3
Latin 109	3	Latin 110	3
Minor subject	0-3	Minor subject	0-3
Linguistics 111	3	Electives, Groups A, B, or C	3-7
Electives, Groups A, B, or C	0-4	Phys. Ed.	1
Phys. Ed.	1	Mil. or A.S. 4	2
Mil. or A.S. 3	2		
	15-19		15-19

THIRD YEAR

First Sem.	*Hr.*	*Second Sem*	*Hr.*
Latin 121	3	Latin 122	3
Latin elective	3	Latin elective	3
Minor subject	6	Minor subject	6
Electives	3-6	Electives	3-6
	15-18		15-18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem*	*Hr.*
Latin	6	Latin	3
Electives	9-12	Electives	12-15
	15-18		15-18

Courses of Instruction

FRENCH

Lower Division

1. **Elementary French.** I, II. 3 hr.

2. **Elementary French,** I, II. 3 hr. Continuation of French 1.

3. **Intermediate French.** I, II. 3 hr. Reading of modern French prose.

4. **Intermediate French.** I, II. 3 hr. Continuation of French 3.

Upper Division

103. **Elementary Conversation.** I. 3 hr. PR: French 3 and 4, or consent.

104. **Elementary Conversation.** II. 3 hr. PR: French 103 or consent.

109. **Grammar and Conversation.** I. 3 hr. PR: 12 hr. of French, or equiv.

110. **Advanced Conversation.** II. 3 hr. PR: French 109, or equiv.

115. **The Classical School.** I. 3 hr. PR: 12 hr. of French, or equiv.

116. **Literature of the Eighteenth Century.** II. 3 hr. PR: 12 hr. of French, or equiv.

118. **Literature of the Nineteenth Century.** I. 3 hr. PR: 12 hr. of French, or equiv.

203. **Refresher Course in Conversational French.** I. 3 hr. PR: Consent.

205. **Fundamentals for Reading French.** I. 3 hr. Undergraduate credit only. Graduate students must register as auditors. PR: Graduate status or upper-division status. The sequence 205-206 is intended for graduate students from other departments to teach them to read general and technical French.

206. **Reading French.** II. 3 hr. Undergraduate credit only. Graduate students must register as auditors. PR: 12 hr. of French or equiv. or French 205. Graduate students may meet the doctoral foreign language requirement by achieving a grade of B or better in this course. Not open to Department of Foreign Languages majors.

217. **French Civilization.** II. 3 hr. PR: 12 hr. of French.

221. **The Romantic Movement.** I. 3 hr. PR. A.B. in French, or consent.

222. **French Realism.** II. 3 hr. PR: A.B. in French, or consent.

226. **Literary Criticism.** II. 3 hr. PR: A.B. in French, or consent.

227. **Graduate Reading in French.** No credit. A special course to help students prepare for the Ph.D. reading examination in French.

229. **Literature of the 16th Century.** I. 3 hr. PR: A.B. in French, or consent.

231. **Phonetics and Pronunciation.** II. 3 hr. PR: 18 hr. of French, or equiv.

237. **Molière.** II. 3 hr. PR: A.B. in French, or consent.

241. **French Structural Linguistics.** 4 hr. PR: 12 hr. of French. Special course for the NDEA Language Institute.

242. **Methods in French Secondary Teaching.** 4 hr. PR: 12 hr. of French. Special course for the NDEA Language Institute.

244. **Explication de Textes.** II. 3 hr. PR: 18 hr. of French, or equiv.

271. **Modern Novel to 1930.** I. 3 hr. PR: A.B. in French, or consent.

272. **The Novel After 1930.** II. 3 hr. PR: A.B. in French, or consent.

292. **Pro-Seminar in French Literature.** 1-6 hr. Special topics.

SPANISH

Lower Division

1. **Elementary Spanish.** I, II. 3 hr.
2. **Elementary Spanish.** I, II. 3 hr. Continuation of Spanish 1.
3. **Intermediate Spanish.** I. 3 hr. Reading of modern Spanish prose.
4. **Intermediate Spanish.** II. 3 hr. Continuation of Spanish 3.

Upper Division

103. **Elementary Conversation.** I. 3 hr. PR: Spanish 3 and 4, or consent.

104. **Elementary Conversation.** II. 3 hr. PR: Spanish 103, or consent.

109. **Grammar and Conversation.** I. 3 hr. PR: 12 hr. of Spanish, or equiv.

110. **Advanced Conversation.** II. 3 hr. PR: Spanish 109, or equiv.

211. **Nineteenth Century Literature to 1870.** I. 3 hr. PR: Spanish 3 and 4, and consent.

212. **Spanish Literature Since 1870.** II. 3 hr. PR: Spanish 3 and 4, and consent.

215. **Lyric Poetry.** I. 3 hr. PR: 12 hr. of Spanish, or equiv.

216. **Spanish Civilization and Culture.** I. 3 hr. PR: 12 hr. of Spanish, or equiv.

217. **Spanish-American Literature and Culture.** I. 3 hr. PR: 18 hr. of Spanish, or equiv.

218. **Spanish-American Literature and Culture.** II. 3 hr. PR: 18 hr. of Spanish, or equiv. Continuation of Spanish 217.

221. **Literature of the Golden Age to 1635.** I. 3 hr. PR: 18 hr. of Spanish, or equiv.

222. **The Golden Age After Lope De Vega.** II. 3 hr. 18 hr. of Spanish or equiv.

223. **Estudios de Estilo.** I. 3 hr. PR: 18 hr. of Spanish, or equiv.

224. **Explicacion de Textos.** II. 3 hr. PR: 12 hr. of Spanish, or equiv.

225. **The Picaresque Novel.** I. 3 hr. PR: 12 hr. of Spanish, or equiv.

227. **Graduate Reading in Spanish.** No credit. Special course to help students prepare for the Ph.D. reading examination in Spanish.

241. **Spanish Structural Linguistics.** 4 hr. PR: 12 hr. of Spanish. Special course for the NDEA Language Institute.

242. **Methods in Spanish Secondary Teaching.** 4 hr. PR: 12 hr. of Spanish. Special course for the NDEA Language Institute.

291. **Cervantes.** II. 3 hr. PR: 18 hours of Spanish, or consent.

292. **Pro-Seminar in Spanish Literature.** 1-6 hr. Special topics.

295. **Sixteenth Century Literature.** I. 3 hr.

297. **Pro-Seminar in Spanish-American Studies.** 1-6 hr. Special topics.

ITALIAN

Lower Division

1. **Elementary Italian.** I. 3 hr.
2. **Elementary Italian.** II. 3 hr. Continuation of Italian 1.
3. **Intermediate Italian.** I. 3 hr. Reading of modern Italian prose.
4. **Intermediate Italian.** II. 3 hr. Continuation of Italian 3.

GERMAN

Lower Division

1. **Elementary German.** I, II. 3 hr.
2. **Elementary German.** I, II. 3 hr.
3. **Intermediate German.** I, II. 3 hr. Reading of modern German prose.
4. **Intermediate German.** II. 3 hr. Continuation of German 3.

Upper Division

103. **Spoken German.** I. 3 hr. PR: German 3 and 4, or consent.

104. **Spoken German.** II. 3 hr. German 103, or consent.

105. **The German Novelle.** I. 3 hr. PR: German 3 and 4, or consent. Representative stories of Keller, Meyer, Storm, and Stifter.

106. **The German Novelle.** II. 3 hr. PR: German 3 and 4, or consent. From Naturalism to present day. Continuation of German 105.

107. **Nineteenth Century Drama.** I. 3 hr. PR: German 3 and 4, or consent. Critical study of selected dramas by Kleist, Grillparzer, Hebbel, and Ludwig.

108. **Nineteenth Century Drama.** II. 3 hr. PR: German 3 and 4, or consent. Continuation of German 107.

109. **Advanced Grammar and Composition.** I. 3 hr. PR: German 103 and 104, or consent. Intensive review of German grammar with extensive practice in German composition and translation into German.

110. **Advanced Composition and Conversation.** II. 3 hr. PR: German 109, or consent. Additional practice in composition, with all explanations and discussions conducted in German.

121. **Scientific German.** I. 3 hr. PR: German 1 and 2. Primarily for students in science courses.

122. **Scientific German.** II. 3 hr. Continuation of German 121.

136. **Introduction to Goethe.** II. 3 hr. PR: German 3 and 4, or consent.

161. **Lyric Poetry.** I. 3 hr. PR: German 3 and 4, or consent.

163. **Modern German Prose in English Translation.** I. 3 hr. Reading and discussion of outstanding German short stories and a few novels. (No credit allowed for departmental major nor for regular language requirements).

201. **Independent Reading.** I. 3 hr. Supervised reading for students who wish to do intensive work in any field of interest.

202. **Independent Reading.** II. 3 hr. Continuation of German 201.

227. **Graduate Reading in German.** No credit. Special course to help students prepare for the Ph.D. reading examination in German.

242. **Faust.** II. 3 hr. Critical study of Goethe's **Faust.**

243. **Medieval German Literature.** I. 3 hr. PR: German 4, or consent.

244. **German Literature of the Restoration and Renaissance.** II. 3 hr. PR: German 4, or consent.

245. **Classicism and Romanticism.** I. 3 hr. PR: German 4, or consent. Critical study of German literature from 1750 to 1830.

246. **The Liberal Age.** II. 3 hr. PR: German 4, or consent. Critical study of German literature from 1830 to 1880, with an emphasis upon Poetic Realism.

247. **The Age of Crisis.** I. 3 hr. PR: German 4, or consent. Critical study of German literature from 1880 to the present.

265. **German Civilization.** I. 3 hr. PR: 12 hr. of German, or consent. General comprehensive survey of the most important aspects of German culture, including a brief historical background, the development of the German language, geography, science, music, art, architecture, literature, and philosophy.

275. **The Modern Novel.** I. 3 hr. PR: 18 hr. of German. Supervised reading of nineteenth century novels.

276. **The Modern Novel.** II. 3 hr. Continuation of German 275, with emphasis on recent fiction.

292. **Pro-Seminar in German Literature.** 1-6 hr. Special topics.

RUSSIAN

Lower Division

1. **Elementary Russian.** I. 3 hr.

2. **Elementary Russian.** II. 3 hr.

3. **Intermediate Russian.** I. 3 hr. Reading of modern Russian prose.

4. **Intermediate Russian.** II. 3 hr. Continuation of Russian 3.

Upper Division

103. **Elementary Conversation.** II. 3 hr. PR: Russian 3 and 4, or consent.

104. **Elementary Conversation.** I. 3 hr. PR: Russian 103, or consent.

105. **The Russian Short Story.** I. 3 hr. PR: 12 hr. of Russian, or equiv.

106. **The Russian Short Story.** II. 3 hr. PR: 12 hr. of Russian, or equiv. Continuation of Russian 105.

121. **Scientific Russian.** I. 3 hr. PR: Russian 1 and 2, or equiv. Primarily for students in science courses.

122. **Scientific Russian.** II. 3 hr. PR: Russian 121 or consent. Continuation of Russian 121.

144. **Survey of Russian Literature.** I. 3 hr. PR: Russian 3 and 4, or consent.

145. **Survey of Russian Literature.** II. 3 hr. Continuation of Russian 144.

211. **The Russian Novel.** I. 3 hr. PR: Russian 3 and 4, or consent.

212. **The Russian Novel.** II. 3 hr. Continuation of Russian 211.

LATIN

Lower Division

1. **Elementary Latin.** I. 3 hr.

2. **Elementary Latin.** II. 3 hr. Continuation of Latin 1.

3. **Intermediate Latin.** I. 3 hr. PR: Latin 1 and 2, or two years of high-school Latin. Selections from Caesar, Aulus Gellius, and Nepos, and from other authors of comparable difficulty, designed to prepare students to read orations of Cicero.

4. **Cicero's Orations.** II. 3 hr. PR: Latin 3, or two years of high-school Latin.

Upper Division

109. **Selections from Roman Prose.** I. 3 hr. PR: Latin 3 and 4, or equiv.

110. **Selections from Roman Poetry.** II. 3 hr. PR: Latin 4 and 109, or equiv.

111. **Latin for Law Students.** II. 3 hr. PR: Latin 3, or two years of high-school Latin. Selections from legal Latin and the **Institutes** of Justinian.

112. **Roman Letterwriting.** I. 3 hr. PR: Latin 4 and 109, or four years of high-school Latin.

121. **Survey of Latin Literature.** I. 3 hr. PR: Latin 109 and 110, or consent.

122. **Survey of Latin Literature.** II. 3 hr. PR: Latin 109 and 110, or consent.

201. **The Story and Novel.** I. 3 hr. PR: Latin 109, 110, or equiv. The origin of the story and novel is traced from Homer to the Medieval Greek and Latin romance writers. Selections from Petronius, the **Cena Trimalchionis**, and from Apuleius, **Cupid and Psyche.**

202. **Drama.** II. 3 hr. PR: Latin 109, 110, or equiv. A brief history of the origin and development of Greek and Roman drama. The **Menaechmi** of Plautus, the **Andria** of Terrence, and the **Medea** of Seneca are read in Latin.

203. **Oratory.** II. 3 hr. PR: Latin 109, 110, or equiv. Survey of Greek and Roman oratory is given and part of the first book of Cicero's **De Oratore**; selections from Quintilian's **Institutes** and from Tacitus' **Dialogus de Oratoribus** are read in Latin.

227. **Graduate Reading in Latin.** No credit. Special course to help students prepare for the Ph.D. reading examination in Latin.

231. **Satire.** II. 3 hr. PR: Latin 109, 110, or equiv. Greek satirical writings and the origin of the Roman satire. Selections in Latin from the **Satires** and **Epistles** of Horace, and from the **Satires** of Persius and Juvenal.

234. **History.** I. 3 hr. PR: Latin 109, 110, or equiv. Origin and development of Roman historiography and its Greek antecedents. Selections in Latin from Livy's **History**, from Tacitus' **Agricola**, and from Suetonius' **Julius Caesar.**

235. **Epic.** I. 3 hr. PR: Latin 109, 110, or equiv. Origin and development of the Greek and Roman epic. Selections from Vergil's **Aeneid**, from Lucretius' **De Rerum Natura**, and from the earlier and later epic poets in Latin.

236. **Philosophy.** II. 3 hr. PR: Latin 109, 110, or equiv. Origin and development of Greek philosophy and its influence upon Roman philosophy. Selections from Cicero's **Tusculan Disputations** on the immortality of the soul and from Seneca's **Epistles** in Latin.

292. **Pro-Seminar in Latin Literature.** 1-6 hr. Special topics.

GREEK

Lower Division

1. **Elementary Greek.** I. 3 hr.
2. **Elementary Greek.** II. 3 hr. Continuation of Greek 1.
3. **Intermediate Greek.** I. 3 hr.
4. **Intermediate Greek.** II. 3 hr. Continuation of Greek 3.

Upper Division

109. **Selections from Medieval and Modern Greek Literature.** I. 3 hr.

110. **Selections from the Attic Orators.** II. 3 hr.

121. **Survey of Greek Literature.** I. 3 hr. PR: Greek 109, 110, or consent.

122. **Survey of Greek Literature.** II. 3 hr. Continuation of Greek 121.

292. **Pro-Seminar in Greek Literature.** 1-6 hr. Special topics.

HEBREW

Lower Division

1. **Elementary Hebrew.** I. 3 hr.
2. **Elementary Hebrew.** II. 3 hr. Continuation of Hebrew 1.
3. **Intermediate Hebrew.** I. 3 hr. Reading of Hebrew prose.
4. **Intermediate Hebrew.** II. 3 hr. Continuation of Hebrew 3.

LINGUISTICS

Upper Division

111. **Introduction to Structural Linguistics.** I. 3 hr. Required for foreign language majors.

201. **Linguistics As Applied to Spanish-American Dialects.** I. 3 hr. PR: Consent.

211. **Middle High German.** I. 3 hr. PR: 12 hr. of German from upper division. Study of the linguistic developments of Middle High German from the eleventh to the fifteenth centuries with illustrative readings from the **Nibelungelied.**

212. **Middle High German.** II. 3 hr. Continuation of Linguistics 211 with illustrative readings from the Middle High German lyric poets and the courtly epics.

225. **Comparative Grammar of Greek and Latin.** I. 3 hr. PR: Consent.

226. **Italic Dialects.** II. 3 hr. PR: Consent.

227. **Vulgar Latin.** II. 3 hr. PR: Latin 12, 22, or equiv. Selections from Latin inscriptions and later Latin literature are studied to illustrate the development of the Latin language from its earliest time to its passing into the Romance languages.

231. **The Structure of Modern Russian.** I. 3 hr. PR: 12 hr. of Russian, or consent.

241. **See** French 241 and Spanish 241.

251. **History of the German Language.** I. 3 hr. PR: 18 hr. of German, or consent. Historical development of standard German with emphasis on its relationships to the other German languages and dialects.

252. **Comparative Germanic Linguistics.** II. 3 hr PR: Linguistics 251, or consent. A comparative study of Gothic, Old English, Old Norse, Old High German and Old Saxon.

255. **History of the Spanish Language.** I. 3 hr. PR: Consent. The development of Spanish and the transformation of the Castilian dialect into the national language of Spain. The course, given in Spanish, will include the cultural factors as well as a study of historical phonology, morphology, and syntax.

271. **Old English.** I. 3 hr. PR: Consent. Elementary study of Old West Saxon with illustrative materials from prose and poetry.

272. **Old English.** II. 3 hr. Continuation of Linguistics 271. Comparison of the Old English dialects, with extensive illustrative readings, especially in **Beowulf.**

281. **Old Norse.** I. 3 hr. PR: Consent. Elementary study of Old West Norse prose.

282. **Old Norse.** II. 3 hr. Continuation of Linguistics 281. Readings in various Old Icelandic sagas; introduction to Old Norse poetry.

290. **Old French.** II. 3 hr. PR: Consent.

292. **Pro-Seminar in Linguistics.** 1-6 hr. Special topics.

296. **Old Spanish.** II. 3 hr. PR: Consent.

LANGUAGE TEACHING METHODS

Upper Division

151. **See** French 151 and Spanish 151.

152. **See** French 152 and Spanish 152.

221. **The Teaching of Foreign Languages.** I. 3 hr. Required of all graduate students who are prospective foreign language teachers.

222. **Language Laboratory Techniques.** II. 3 hr. Required of all candidates for a graduate degree in a foreign language.

242. See French 242 and Spanish 242.

270. **Problems in the Teaching of French in the Elementary School.** I. 3 hr. PR: Consent.

BIBLIOGRAPHY AND RESEARCH

Upper Division

265. **Methods of Research.** I. 3 hr. For students of French, German, or Spanish.

GEOLOGY AND GEOGRAPHY

Laboratory Fees

A non-refundable fee is required of all students who take the following laboratory courses in Geology:

Course	*Per Semester*	*Course*	*Per Semester*
Geol. 2	$2.00	Geol. 202	$2.00
Geol. 4	2.00		

Bachelor of Science in Geology

Students planning to seek employment in the petroleum industry should take Math. 16 and Math. 17. A total of 132 hours is required, of which a minimum of 124 hours must be established in subjects exclusive of credits earned in required Physical Education, required Military Science or Air Force Aerospace Studies, English 0, and Math. 2.

FIRST YEAR				SECOND YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3	Chem. 11	4	C.E. 1	2
Foreign language	3	Foreign language	3	Foreign language	3	Chem. 12	4
Geol. 1	3	Geol. 3	3	Geol. 125	1	Foreign language	3
Geol. 2	1	Geol. 4	1	Geol. 184	4	Geol. 185	4
Math. 3	3	Math. 4	3	Math. 15	4	Mil. or A.S. 4	2
Mil. or A.S. 1	2	Mil. or A.S. 2	2	Mil. or A.S. 3	2	Electives	3
Phys. Ed.	1	Phys. Ed. 2	1				
	16		16		18		18

SUMMER SESSION BEFORE FOURTH YEAR

	Hr.
Geol. 266 (5 weeks)	6

THIRD YEAR				FOURTH YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
Geol. 127	2	English 126	3	Geol. 221	3	Electives	17
Geol. 151	4	Geol. 231	4	Electives	14		
Geol. 270	3	Geol. 261	3				
Physics 1 (11)	4	Physics 2 (102)	4				
Electives	4-5	Electives	2-3				
	17-18		16-17		17		17

Bachelor of Arts in Geology

A minimum of 124 hours must be established in subjects exclusive of credit earned in required Physical Education, required Military Science or Air Force Aerospace Studies, English 0, and Math. 2.

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Foreign language	3	Foreign language	3
Geol. 1	3	Geol. 3	3
Geol. 2	1	Geol. 4	1
Math. 2 or 3	3	Math. 4	3
Mil. or A.S. 1	2	Mil. or A.S. 2	2
Phys. Ed. 1	1	Phys. Ed. 2	1
	16		16

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 11	4	Chem. 12	4
Foreign language	3	Foreign language	3
Geol. 184	4	Geog. 109	3
Mil. or A.S. 3	2	Mil. or A.S. 4	2
Electives	3-4	Electives	3-4
	17		15-16

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Art 115	3	Chem. elective	3
Geol. 151	4	Geol. 261	3
Physics 1	4	Physics 2	4
Electives	6	Electives	7-8
	17		17-18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Geol. 127	2	English 126	3
Geol. 221	3	Geol. 231	4
Electives	12	Electives	10
	17		17

Courses of Instruction

GEOLOGY

Lower Division

1. **Physical Geology.** I, II. 3 hr. Description of composition and structure of earth; physical processes which change earth's surface. Accompanied by Geol. 2 to meet requirements for 4 hr. credit in a laboratory science in physical geology.

2. **Physical Geology Laboratory.** I, II. 1 hr. Accompanies Geol. 1.

3. **Historical Geology.** I, II. 3 hr. Evolution of earth and its inhabitants. Accompanied by Geol. 4 to meet requirements of 4 hr. credit in a laboratory science in historical geology.

4. **Historical Geology Laboratory.** I, II. 1 hr. Accompanies Geol. 3.

5. **Introduction to Geology.** I, II. 3 hr. Designed especially for non-science majors. Composition and structure of earth and geologic processes which shape its surface. Accompanied by Geol. 2 to meet requirements for 4 hr. credit in a laboratory science in physical geology.

Upper Division

125. **Geologic Drafting.** I. 1 hr.

127. **Map Interpretation.** I. 2 hr. PR: Geol. 2, 4. Relation of earth structure and history to land farms as shown on topographic maps.

151. **Structural Geology.** I. 3-4 hr. PR: Geol. 1. Shape and position of rock masses in the earth's crust; mechanical principles underlying various types of rock deformation; indication of economic importance of deformed rock structures with respect to recovery of mineral products.

184. **Mineralogy.** I. 4 hr. PR: 1 year of geology. Elements of crystallography and systematic study of minerals except silicates. Identification of minerals by their physical properties supplemented by blow-pipe analysis.

185. **Mineralogy and Petrography.** II. 4 hr. PR: Geol. 184. Description, mode of occurrence, and classification of silicate minerals and rocks.

201. **Physical Geology for Teachers.** I, II, S. 3 hr. PR: High school teaching certificate, and consent. Composition and structure of earth and the geologic processes which shape its surface.

202. **Physical Geology Laboratory for Teachers.** I, II, S. 1 hr. Accompanies Geol. 201. Laboratory and field study of earth materials and features, and the topographic and geologic maps used to represent them.

218. **Geology and the Earth Sciences.** 4 hr. PR: Open only to members of N.S.F. Summer Institute. The physical nature of the earth. Rotation, revolution, shape, and structure of the earth. Geologic forces changing the earth. Geologic history.

221. **Geomorphology.** I. 3 hr. Surface features of eastern United States.

222. **Geomorphology.** II. 3 hr. Surface features of western United States.

228. **Photogeology.** II. 3 hr. PR: Geol. 127, 151. Instruction in basic and advanced techniques of air photo interpretation.

231. **Invertebrate Paleontology.** II. 4 hr. PR: Geol. 3, 4. Invertebrate fossils; biologic classification, evolutionary development, and use in correlation of strata.

235. **Introductory Paleobotany.** I, II. 4 hr. PR: Geol. 3 and/or Bot. 2. Resume of development of principal plant groups through the ages, present distribution, mode of occurrence and index species, methods of collection.

261. **Stratigraphy and Sedimentation.** II. 3 hr. Study of sediments and sedimentary rocks. Field techniques stressed as data gathered and interpreted from rocks of Pennsylvanian age in Morgantown vicinity. Two-day field trip required.

263. **Ground-Water Hydrology.** II. 3 hr. PR: Geol. 1 or consent. Study of the principles of ground-water hydrology; occurrence, development, uses, and conservation of ground-water.

266. **Appalachian Geology Field Camp.** S. 6 hr. PR: Geol. 231, 261. Practical experience in detailed geological field procedures and mapping. Living expenses in addition to tuition must be paid at time of registration.

269. **X-Ray Diffraction.** I, II. 2 hr. The theory of X-ray diffraction and application to the analysis of crystalline materials using the powder camera and X-ray diffractometer. Open to advanced students in geology, chemistry, engineering and related fields with consent of instructor.

270. **Mineral Resources.** I, S. 3 hr. PR: Geol. 1, 2. General survey of character, origin, and distribution of natural mineral resources, including mineral fuels, nonmetallic minerals, ore deposits, and ground-water.

272. **Petroleum Geology.** II. 3-4 hr. PR: Geol. 151. Origin, geologic distribution, methods of exploration and exploitation, uses and future reserves of petroleum and natural gas in the world.

285. **Optical Mineralogy.** I. 4 hr. PR: Geol. 185 and one year of Physics. Principles and practice in use of the petrographic microscope in identification of minerals. Emphasis on determination by immersion method.

290. **Geologic Problems.** I, II. 1-6 hr. Special problems for seniors and graduates.

291. **Seminar.** I. 1 hr.

294. **Introductory Geochemistry.** I. 3 hr. PR: Geol. 185 or consent. Evolution of earth as suggested by chemical and physical data, followed by topics of current interest, including geologic thermometry, oxidation potential and pH, and geochemical prospecting.

295. **Geochemistry.** II. 3 hr. PR: Geol. 185 or consent. Mineral systems at low temperatures and low pressures considered in terms of partial pressure, oxidation potential, and pH. Laboratory study includes directed investigation of a topic of interest to the student.

GEOGRAPHY

Lower Division

1. **Introduction to Geography.** I, II. 3 hr. Basic principles of the discipline, including maps, climate, physiographic, urban, political and cultural geography. Not open to students who have completed either Geography 7 or 8.

7. **Physical Geography.** I, II. 3 hr. Study of earth's physical regions as modified and classified by man.

8. **Human Geography.** I, II. 3 hr. Study of land use and settlement patterns resulting from man's occupance of the earth.

Upper Division

108. **Geography of Natural Resources.** II. 3 hr. Nature and distribution of the natural resources in the United States and factors involved in planning resource-development projects.

109. **Economic Geography.** I, II. 3 hr. Earth's land use patterns and interactions that result from man's economic activities.

116. **Geography of Anglo-America.** I. 3 hr. Regional characteristics and problems of development.

118. **Geography of Western Europe.** I. 3 hr. Regional characteristics and problems of development.

214. **Historical Geography of Anglo-America.** II. 3 hr. Exploration, settlement, and changing patterns of human occupance from the sixteenth century to the present; cultural areas and their significance.

216. **Urban Geography.** II. 3 hr. Location, development and change of urban land use patterns.

219. **Problems in Geography.** I, II. 1-3 hr. per sem. PR: Consent.

HISTORY

History majors are required to complete 12 hours in lower-division history courses, and 18 hours in upper-division history courses. Courses in Group A are required of all majors at the lower-division level. Of the 18 hours in upper-division history courses at the 100 course level, the major should divide his course selections equally between Groups B and C below. With the approval of his adviser, he may elect options at higher course levels.

Group A: History 1, 2, 52, 53.
Group B: History 149, 150, 151, 152, 153, 154, 155, 156.
Group C: History 101, 102, 103, 104, 105, 106, 107, 108.

Curriculum for A.B. With Major in History

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Foreign language	3	Foreign language	3
Lab. Sci.	4	Lab. Sci.	4
Hist. 1	3	Hist. 2	3
Mil. or A.S. 1	2	Mil. or A.S. 2	2
Phys. Ed.	1	Phys. Ed.	1
	16		16

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Lab. Sci.	4	English Lit.*	3
Foreign language	3	Foreign language	3
Hist. 52	3	Hist. 53	3
Econ. 51	3	Econ. 52	3
Pol. Sci. 1	3	Pol. Sci. 2	3
Mil. or A.S. 3	2	Mil. or A.S. 4	2
Phys. Ed.	1	Phys. Ed.	1
	19		18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
History	6	History	6
Minor	3	Minor	3
Electives	3-6	Electives	6-9
English Lit.*	3		
	15-18		15-18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
History	6	History	3-6
Minor	3-6	Minor or Electives	3-6
Electives	6-9	Electives	6-9
	15-18		15-18

*Teacher's Certification.

Courses of Instruction

*Lower Division**

1. Western Civilization from the Earliest Times to the Reformation. I, II. 3 hr.
2. Western Civilization from the Reformation to the Present. I, II. 3 hr.
52. Growth of the American Nation to 1865. I, II. 3 hr.
53. Making of Modern America, 1865 to the Present. I, II. 3 hr.

Upper Division

101. History of Ancient Times: Stone Age to the Fall of Rome. 3 hr.
102. Medieval Europe: Fall of Rome to the Renaissance. 3 hr.
103. Modern Europe, 1500-1763. 3 hr.
104. Modern Europe, 1763-1871. 3 hr.
105. Modern Europe, 1871 to Present. 3 hr.
106. British Civilization to 1660. 3 hr.
107. British Civilization Since 1660. 3 hr.
108. History of Asia. 3 hr.
149. The United States and Pennsylvania. 3 hr.
150. West Virginia. 3 hr.
151. The American Colonial and Revolutionary Experience. 3 hr.
152. The Eary Republic, United States, 1781 to 1861. 3 hr.
153. The United States, 1865 to 1918. 3 hr.

*All first- and second-year courses are offered as lower-division "year-courses". These courses run through the year, but in no case is the first half-year a prerequisite for the second half. For example, Hist. 1 is not a prerequisite for Hist. 2. Hist. 1 and 2 make up the introductory first year in history. Hist. 52 and 53 are primarily for sophomores but are open to freshmen.

154. Recent America, United States Since 1918. 3 hr.
155. Latin American History, Colonial Period and the Wars of Independence. 3 hr.
156. Latin America Since 1824. 3 hr.
202. Medieval Cultural History. 3 hr.
203. The Renaissance and the Reformation. 3 hr.
204. English Social History, 14th to 18th Century. 3 hr.
205. English Social History, 18th Century to the Present. 3 hr.
206. French Revolution and Napoleon. 3 hr.
207. History of Modern France. 3 hr.
208. History of Russia from Ancient Times to Alexander III. 3 hr.
209. History of Russia: The Revolutionary Era and the Soviet Period. 3 hr.
210. European Diplomatic History, 1815 to 1919. 3 hr.
211. European Diplomatic History, 1919 to Present. 3 hr.
212. History of Germany from the Roman Era to the Early 19th Century. 3 hr.
213. History of Modern Germany. 3 hr.
214. Modern Spain. 3 hr.
215. Problems of the Pacific. 3 hr.
230. The ABC Powers of Latin America. 3 hr.
250. Economic and Social Development of West Virginia. 3 hr.
253. The American Frontier East of the Mississippi. 3 hr.
254. The American Frontier West of the Mississippi. 3 hr.
256. The Old South. 3 hr.
257. The American Civil War. 3 hr.
258. The New South. 3 hr.
259. The United States from McKinley to the New Deal, 1898 to 1933. 3 hr.
260. American Diplomacy to 1901. 3 hr.
261. American Foreign Policy and Diplomacy, 1901 to the Present. 3 hr.
269. Recent American History, 1933 to the Present. 3 hr.
279. American Economic History to 1865. 3 hr.
280. American Economic History Since 1865. 3 hr.
281. The American Labor Movement. 3 hr.
290. Intellectual and Social History of the United States to 1876. 3 hr.
291. Intellectual and Social History of the United States Since 1876. 3 hr.
292. European Intellectual History to the Age of Enlightenment. 3 hr.
293. European Intellectual History from the Age of Enlightenment to the Present. 3 hr.

THE HUMANITIES

1, 2. **Introductory General Course.** I, II. 3 hr. per sem. This course takes cross sections of Western Civilization at its most significant points. Within an historical framework, it treats of the principal developments and landmarks of literature, philosophy, art, architecture, and music from pre-Greco-Roman times up to now, comparing the past with the present and interrelating the various aspects of our civilization. A special syllabus helps tie together the material of the course.

141. **Great Books.** (First Course). I. 3 hr. This course considers six literary masterpieces in translation: Plato's **Republic**, Sophocles' **Oedipus Rex** and **Antigone**, Dante's **Divine Comedy**, Cervantes' **Don Quixote**, and Goethe's **Faust.** Taken separately and in order, they represent the Greek world, the Middle Ages, the Renaissance, and the Modern period. Taken as a group, they illustrate the persistent conflict between the actual and the ideal in the literature of Western Civilization.

142. **Great Books.** (Second Course). II. 3 hr. This course considers five literary masterpieces, of which four are in translation: Marcus Aurelius' **Meditations**, Benvenuto Cellini's **Memoirs**, Montaigne's **Essays**, Rousseau's **Confessions**, and **The Education of Henry Adams.** These personal evaluations of the problems of life, ranging from the Roman Empire to modern America, constitute the integrating principle of the course.

143. **Great Books.** (Third Course). I. 3 hr. This course considers selected masterpieces of scientific writing, including Lucretius' **On the Nature of Things**, Francis Bacon's **Novum Organum**, Descartes' **Discourse on Method**, Charles Darwin's **Origin of Species**, Freud's **The Interpretation of Dreams**, and Whitehead's **Science and the Modern World.** Taken as a group, these works provide a survey from the ancient world to the present day of the impact of science in the realm of the humanities.

144. **Great Books.** (Fourth Course). II. 3 hr. This course considers a group of great and provocative creations of societies, ideal or not so ideal, starting with Sir Thomas More's **Utopia** and including Bacon's **The New Atlantis**, Butler's **Erewhon**, Bellamy's **Looking Backward**, B. F. Skinner's **Walden Two**, Huxley's **Brave New World**, and Orwell's **1984.** Taken as a group, these works provide a record of modern man's hopes and fears in his attempt to adjust to a world of rapid technological and social change.

181, 182. **American Civilization.** I, II. 3 hr. per sem. This course acquaints the student with the salient characteristics of American Civilization as they have developed since the planting of European colonies on this continent. Emphasis is placed on the unique contributions of successive arrivals on American shores to the making of the distinctive American culture, as evidenced in its folkways, arts, and philosophy. The central theme of the course is the manifestation of the democratic spirit in the thought and feelings of the American people.

250. **Culture Tour of Europe.** S. 6 hr. PR: Some cultural background in European civilization such as Humanities 1 and 2, History 1 and 2, art survey courses, or equiv., or consent.

260. **Culture Tour of Latin America.** S. 6 hr. PR: Some cultural or historical background in Latin America, such as history or art courses, or consent.

270. **Cradle of History Tour of the Near East.** S. 6 hr. PR: Humanities 1 and 2, History 1 and 2, or equiv., or consent.

280. **Around-the-World Culture Tour.** S. 6 hr. PR: A course in world or western civilization, such as Humanities 1 and 2, History 1 and 2, or consent.

LIBRARY SCIENCE

Courses in undergraduate library science are designed to meet the needs of students preparing to qualify for State certification as teacher-librarians in public schools, students who desire a general program in library science, and students who are interested in preparing for graduate study in librarianship. A student planning to serve as a school librarian must complete the minimum number of hours of Education courses required for certification. Students wishing to enter other fields of library science should plan their programs to include appropriate courses.

Certain courses, such as "Using Books and Libraries," will be valuable to any University student. "Library Materials for Children" and "Book Selection for Secondary School Libraries" will be helpful to prospective teachers.

Curriculum for A.B. Degree With Major in Library Science

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Foreign language	3	Foreign language	3
Laboratory Sci.	4	Laboratory Sci.	4
Lib. Sci. 1	3	Electives	2-5
Electives	2	Phys. Ed.	1
Phys. Ed.	1	Mil. or A.S. 2	2
Mil. or A.S. 1	2		
	18		16-18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 3	3	English 4	3
Foreign language	3	Foreign language	3
Soc. Sci. or Pol. Sci.	4	Soc. Sci. or Pol. Sci.	4
Lib. Sci. 101	3	Electives	5
Electives	2	Phys. Ed.	1
Phys. Ed.	1	Mil. or A.S. 4	2
Mil. or A.S. 3	2		
	18		18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Lib. Sci. 223	3	Lib. Sci. 224	3
Humanities 141 Great Books I	3	Humanities 142 Great Books II	3
Electives	12	Electives	15
	14-18		14-18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Lib. Sci. 222	3	Lib. Sci. 227	3
Lib. Sci. 226	3	Electives	15
Electives	12		
	18		18

Courses of Instruction

1. **Using Books and Libraries.** I, II, S. 3 hr. Planned to give working knowledge of library facilities, particularly of the University Library. General reference sources, basic principles of cataloging, and departments of the library are studied. A course that is useful to any student in the University; required for library science majors.

101. **Reference and Bibliography.** I, II, S. 3 hr. PR: Lib. Sci. 1 or consent. Basic reference books, dictionaries, encyclopedia, indexes, yearbooks, and other reference materials are studied and evaluated, with emphasis on the theory and practical experience of reference books.

203. **Library Materials for Children.** I, II, S. 3 hr. Survey of the development of children's literature with emphasis on modern books. Evaluation of the aids and standards for selection of books and materials in this field. Investigation of children's reading interests and practice in storytelling are included. Discussions, reports and special projects.

205. **Selection of Books and Related Materials for Young People.** II, S. 3 hr. A survey of adolescent literature and other library materials adapted to the needs of high school students.

207. **Organization and Administration of the Instructional Materials Center in the Secondary School.** I, S. 3 hr. A study of organization and administration of instructional materials center, including planning, equipment, routines and schedules.

221. **Public and Regional Library Service.** S. 3 hr. PR: Consent. Principles governing the administration of tax-supported public libraries and the development of larger units of service. Objectives, functions, control, finances, building and equipment, personnel, special services.

222. **Field Practice.** I, S. 3 hr. Designed to promote an understanding of total library programs and the interrelations of library methods and skills found in the different libraries. A minimum of 80 clock hours are required to be completed by the student. Taken only after basic courses have been completed.

223. **Cataloging and Classification.** I, S. 3 hr. Basic principles and problems of cataloging and classification combined with practical experience in processing the various types of books and materials. Problems peculiar to the teacher-librarian will be considered.

224. **History of Books and Libraries.** I, S. 3 hr. A survey course, including the development of the book from early manuscript form, history of printing, printers, book illustrations, bindings, and the library and its development.

225. **Books and Reading for Adults.** II, S. 3 hr. Reading and evaluation of representative books in broad subject fields. Stress on both modern titles and the classics for the adult leader. Emphasis on book reviewing, both written and oral, with a study of book selection aids. Class discussions, problems, term reports.

226. **Literature of the Social Sciences.** I, S. 3 hr. PR: Consent. An approach to the selection and use of books and materials in the social sciences.

227. **Literature of the Humanities.** II, S. 3 hr. Bibliographical and other reference sources in the major subject areas of the humanities, including religion, philosophy, fine arts, music, and literature.

228. **Literature of Science and Technology.** II, S. 3 hr. PR: Consent. Designed to give the student a good working knowledge of the increasingly complex literature of science and technology.

230. **Library Resources for the School Curriculum.** II. 3 hr. Broadened experiences in both library and outside resources that lend themselves to curriculum enrichment, including guidance, remedial reading, text books, community resources, all phases of audio-visuals, etc. Presented to elementary and secondary teachers as well as librarians to help them give more effective service.

235. **Organization and Administration of the Instructional Materials Center in the Elementary School.** II. 3 hr. PR: Lib. Sci. 223 for teacher-librarians. Organization and administration of instructional materials center, including planning quarters, selection, acquisition of books and other materials, supervision of library assistants, relations with faculty, administration and community.

MATHEMATICS, ASTRONOMY, AND STATISTICS

A student must have a grade-point average of 2.0 or higher in mathematics courses in the lower division before he will be admitted to the upper division as a mathematics major.

Lower-division students who plan to become majors in the Department, who also wish to meet the requirements for teacher certification, should so inform their lower-division adviser, and plan their schedules carefully in order to avoid loss of time.

The foreign language should be French, German, or Russian.

Mathematics majors must complete 24 hours of mathematics beyond calculus, including Math. 235, 236, 237, 243, 251, and 252.

Suggested Mathematics Program

FIRST YEAR				SECOND YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3	Foreign language	3	Foreign language	3
Foreign language	3	Foreign language	3	Math. 17	4	Math. 235	3
Math. 15	4	Math. 16	4	Elective Core group C	4-5	Elective Core group C	4-5
Mil. or A.S. 1	2	Mil. or A.S. 2	2	Mil. or A.S. 3	2	Mil. or A.S. 4	2
Phys. Ed.	1	Phys. Ed.	1	Phys. Ed.	1	Phys. Ed.	1
Electives Core gp. A or B	3-6	Electives Core gp. A or B	3-6	Electives Core gp. A or B	3-6	Electives Core gp. A or B	3-6
	16-17		16-17		17-18		17-18

THIRD YEAR				FOURTH YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
Math. 236	3	Math. 237	3	Math. 251	3	Math. 252	3
Electives Core gp. A or B	0-3	Math. 243	3	Math. elective	3	Math. elective	3
Electives	12	Electives Core gp. A or B	0-3	Electives	12	Electives	12
		Electives	12				
	18		18		18		18

Courses of Instruction

MATHEMATICS

Math. 0 and 1 are offered to enable students to remove entrance conditions in mathematics. Each course meets throughout the school year. Neither course carries University credit, although each is considered equivalent to three hours per semester in calculating student course loads.

Self-instruction programmed course materials in Math. 0 and 1 are available on a rental basis.

Pre-College

0. **Elementary Algebra.** I and II. ½ unit per sem. A two-semester course equivalent to first-year high school algebra.

1. **Geometry.** I and II. ½ unit per sem. A two-semester course covering the usual material of high school plane and solid geometry.

2. **Algebra.** I, II. 3 hr. PR: 1 unit of algebra.

Lower-Division

3. **College Algebra.** I, II. 3 hr. PR: 1½ units of algebra and a satisfactory performance on the American College Test or Math. 2, and 1 unit of geometry.

4. **Plane Trigonometry.** I, II. 3 hr. PR: 1½ units of algebra and a satisfactory performance on the American College Test or Math. 2, and 1 unit of geometry.

6. **Arithmetic for Elementary Teachers.** I, II. 3 hr.

8. **Finite Mathematics.** II. 3 hr. PR: 2 units of high school mathematics or consent. For students in commerce and social science.

15. **Calculus I.** I, II. 4 hr. PR: 2 units of algebra, ½ unit trigonometry, and satisfactory performance on the American College Test, or Math. 3 and 4. Introduction to the calculus with analytic geometry.

16. **Calculus II.** I, II. 4 hr. PR: Math. 15. Completion of plane analytic geometry as needed for geometric applications of the calculus, techniques of integration, further interpretations of the definite integral, and infinite series.

17. **Calculus III.** I, II. 4 hr. PR: Math. 16. Solid analytic geometry, calculus of two or more variables, and introduction to differential equations.

21, 22. **Introduction to Mathematics.** I, II. 2 hr. per sem. PR: 1 unit of algebra. Reasoning, development of elementary mathematics, function and limit concepts, topics in modern mathematics, the nature of mathematics and its relation to modern civilization.

Upper-Division

106. **Mathematical Logic 1.** I. 3 hr. PR: Philos. 4 or consent. A study of the logic of statements, predicates, and identity (equivalent to Philos. 106).

110. **Digital Computer Programming.** I, II. 1 hr. PR: Math. 3. Preparation and execution of Fortran computer programs.

125. **Theory of Games.** II. 3 hr. PR: Math. 17 or consent. Elements of Matrix Algebra and Probability. Theory of Games, including decision theory, linear and dynamic programming, and strategy.

138. **Modern Geometry for Teachers.** II. 3 hr. PR: Math. 17 or consent. For high school teachers. Foundations of geometry. Special topics from Euclidean, projective, and non-Euclidean geometries.

140. **Differential Equations.** I, II. 3 hr. PR: Math. 17. Primarily for engineers and scientists. Ordinary differential equations and applications; simultaneous systems, solution by series; numerical methods; boundary value problems and Fourier series.

148. **History of Mathematics.** II. 3 hr. PR: Math. 15. Survey of the development of mathematics through the calculus, with emphasis on the mathematical theories and techniques of each period and their historical evolution.

201, 202. **Combinatorial Analysis.** I, II. 3 hr. per sem. PR: One year of calculus. Permutations, combinations, generating functions, principle of inclusion and exclusion, distributions, partitions, compositions, trees, and networks.

206. **Mathematical Logic 2.** I or II. 3 hr. PR: Math. 106. Formalization of the material in the previous term, the concepts of consistency, decidability, and completeness (equiv. to Philos. 206).

208, 209. **Theory of Probability.** I, II. 3 hr. per sem. PR: Math. 17. Fundamental theorems. Development of density and distribution functions in the discrete and continuous cases. Classical problems and solutions. Moments, characteristic functions, limit theorems. Applications.

213. **Intermediate Differential Equations.** II. 3 hr. PR: Math. 140, 252 (or 258). Second-order linear equations, Riccato equations, complex variables. Series solutions. Equations of Fuchsian type, hypergeometric equation, confluence of singularities. Classical equations, applications.

220, 221. **Numerical Analysis.** I, II. 3 hr. per sem. PR: Math. 17 and pre- or corequisite Math. 110 or I.E. 180, or consent. The composition, propagation and generation of error. The discrete finite difference calculus. Polynomial approximation including interpolation, numerical solution of differential equations, least squares, Chebyshev polynomials. Eigenvalue problems, Random numbers, and Monte Carlo Methods.

230, 231. **Theory of Numbers.** I, II. 3 hr. PR: One year of calculus. Introduction to classical number theory, covering such topics as divisibility, the Euclidean algorithm, Diophantine equations, congruences, primitive roots, quadratic residues, number-theoretic functions, distribution of primes, irrationals, and combinatorial methods. Special numbers, such as those of Bernoulli, Euler, and Stirling.

232. **Mathematical Statistics.** II. 3 hr. PR: Math. 17. Discrete and continuous variables; correlation, regression, sampling theory, normal, chi-square, t, and F distributions; significance tests; analysis of variance.

235. **Introduction to Analysis and Topology.** I, II. 3 hr. PR: Math. 17 or consent. A study of sets, relations, functions; cardinal numbers, and orderings. Topological spaces including continuity, covergence, separation, compactness, and connectedness.

236. **Introduction to Algebraic Structures.** I, II. 3 hr. PR: Math. 17 or consent. Basic study of groups, rings, integral domains, fields, and polynomial rings. Special consideration of the real and complex fields and related topics.

237. **Introduction to Linear Algebra.** I, II. 3 hr. PR: Math. 17 or consent. A study of vector spaces, matrices, determinants, linear transformations, linear programming, bilinear and quadratic forms, and related topics.

243. **Projective Geometry.** I, II. 3 hr. PR: Math. 236. Projective, affine, and metric geometries of the line, plane, and space; conics, and quadrics.

245. **Vector Analysis.** I. 3 hr. PR: Math. 140. Vector definitions and operations, differentiation, operator del, integration, generalized coordinates, irrational solenoidal vectors, electrostatic fields, potentials.

247. **Theory of Numbers.** S. 3 hr. PR: Math. 17. Divisibility, distribution of primes, theory of congruences, theory of quadratic residues, arithmetical properties of the roots of unity, Diophantine equations, and the prime number theorem.

251, 252. **Advanced Calculus.** I, II. 3 hr. per sem. PR: Math. 235 or consent. A study of sequences, limits, continuity, definite integral, convergence, differentiation, differentials, functional dependence, multiple integrals, line and surface integrals, and differential forms.

256. **Introduction to Complex Variables.** II. 3 hr. PR: Math. 258 or consent. Introductory course primarily for students in engineering and physics. Elementary principles, conformal mapping, and applications.

257. **Applied Mathematics I.** I, II. 3 hr. PR: Math. 140. Primarily for engineers and scientists. Elements of function theory. Differential and integral calculus. Space geometry. Line, surface, and multiple integrals. Infinite series. Complex variables and applications.

258. **Applied Mathematics II.** I, II. 3 hr. PR: Math. 257. Primarily for engineers and scientists. Linear equations. Transformations and quadratic forms. Vector and tensor analysis. Orthonormal functions. Integral equations. Variational methods. Elements of probability.

259. **Introduction to the Laplace Transform.** II. 3 hr. PR: Math. 140. Introduction at the undergraduate level to the theory and application of the Laplace transform.

260. **Advanced Real Calculus.** S. 3 hr. PR: Math. 17. Limits, series, metric spaces, uniformity, integrals.

261, 262, 263. **Special Topics.** I, II, S. 2-4 hr. Topics in algebra, geometry, and analysis for secondary school teachers.

264, 265. **Foundations of Algebra.** S. 2 hr. PR: Differential and integral calculus, or consent. Not open to students with credit for Math. 236. Introduction to

algebraic structures; rings, the integral domain of integers, properties of the integers, fields, polynomials over the field, groups; matrices; linear systems; vector spaces; vector geometry; linear transformations; and linear programming.

266, 267. **Foundations of Geometry.** S. 2 hr. PR: Differential and integral calculus, or consent. A study of affine, projective, Euclidean, and non-Euclidean geometries.

268, 269. **Probability and Statistics.** S. 2 hr. PR: Differential and integral calculus, or consent. Finite sample space, measure of the set of outcomes and probability of events, independent trials, functions on the sample space, approximations to the binomial distribution, elementary statistical inference, continuous sample spaces, limit theorems, stochastic processes, statistical models and applications.

270, 271. **Introduction to Mathematics for the Elementary Teacher.** I, II. 3 hr. per sem. PR: Math. 6 or consent. Systems of numeration; sets, relations, binary operations, decimal and other base systems; natural numbers, integers, rational numbers, and real numbers with emphasis on the algebraic structure of each; the notions of length, area, and volume; pythagorean theorem; and coordinate geometry.

280. **Introduction to Metamathematics. I.** I or II. 3 hr. PR: Consent. Survey of the methodology of the deductive sciences with emphasis on the theory of proof and effective operations therein (equiv. to Philosophy 280).

281. **Introduction to Metamathematics II.** I or II. 3 hr. PR: Math. 280. This course deals with recursive function theory. Godel's proof and associated results (equiv. to Philosophy 281).

299. **Seminar in Applied Mathematics.** I, II. 1-12 hr.

ASTRONOMY

Upper Division

106. **Descriptive Astronomy.** II. 3 hr.

216. **Astronomy for Teachers.** S. 3 hr. Introduction to astronomy with special emphasis on the needs of physical science teachers and science club directors. Not open to students with credit for Astron. 106.

255. **Mathematical Astronomy.** II. 3 hr. PR: Astron. 106, Math. 140. Development of the implications of Kepler's Laws and Newton's Law of Gravitation.

STATISTICS

Upper Division

101. **Introduction to Statistical Methods.** I, II. 3 hr. PR: Math. 3. Basic concepts of statistical models, distributions, probability, random variables, tests of hypotheses, confidence intervals, regression, correlation, chi-square and index numbers. (Equivalent to Econ. 125 and Psych. 130.)

161. **Introduction to Mathematical Statistics.** I, II. 3 hr. PR: Math. 16. Probability, discrete and continuous probability distributions, expectations, sums of random variables, sampling distributions, point and interval estimation, tests of hypotheses.

201. **Intermediate Statistical Methods.** II. 3 hr. PR: Stat. 101. Extension of basic concepts of statistical models, elementary decision theory, estimation, random variables, one- and two-way classification models, analysis of variance, F-distribution, time series, seasonal and cyclical movements, simple and multiple linear regression and correlation analysis. (Equivalent to Econ. 256).

211. **Statistical Methods 1.** I, II. 3 hr. PR: Math. 3. Basic concepts of statistical models, distributions, probability, random variables, tests of hypotheses, confidence intervals, regression, correlation, transformations, F and X^2 distributions, analysis of variance for one- and two-way classification models, multiple range tests, missing plots, and sample size. (Equivalent to Psych. 211 and Ed. 211.)

212. **Statistical Methods 2.** I, II. 3 hr. PR: Stat. 211, Stat. 213, or Stat. 201. Extension of basic concepts of statistical models, design of experiments, multiway classification models, factorials, split plot design, simple covariance, orthogonal comparisons, multiple linear and nonlinear regression and correlation analysis, chi-square, and non-parametric statistics. (Equivalent to Psych. 215.)

213. **Basic Statistical Analysis 1.** I, II. 3 hr. PR: Math. 16. Measures of central tendency and variation, probability, sampling, probability distributions, inference, tests of hypotheses, confidence intervals, analysis of variance, simple linear regression and correlation, and enumeration. (Equivalent to I.E. 244.)

214. **Basic Statistical Analysis 2.** I, II. 3 hr. PR: Stat. 213 or equiv. Single and multi-factor experimental designs; fixed, mixed and random effect models; split plot designs; multilinear and nonlinear regression and correlation analyses; and analysis of covariance. (Equivalent to I.E. 214.)

221. **Design of Experiments.** I. 3 hr. PR: Stat. 212 or Stat. 214. Extension of basic concepts of statistics to the more complicated models and use of samples, design and analysis of experiments over time and space, fractional replications, incomplete block designs, cross-over designs, lattice designs, and least squares analysis for designs with unequal subclass numbers.

231. **Sampling Methods.** I. 3 hr. PR: An introductory course in statistics. Methods of sampling from finite and infinite populations, choice of sampling unit, sample survey design, estimation of confidence limits and optimum sample size, and single and multi-stage sampling procedures.

233. **Nonparametric Statistics.** II. 3 hr. PR: An introductory course in statistics. Single sample tests; tests for related samples, two independent samples, k related samples, k independent samples; and measures of correlation.

241. **Multivariate Methods 1.** 3 hr. PR: Stat. 201, Stat. 211, or Stat. 213. Introduction to elementary matrix operations, partial and multiple linear and nonlinear correlation and regression analyses, and introduction to discriminant analysis. (Equivalent to Psych. 217.)

242. **Multivariate Methods 2.** II. 3 hr. PR: Stat. 241 or equiv. This course includes a discussion of the multivariate normal distribution, tests of hypotheses about the sample mean vectors and variance-covariance matrices from a multivariate normal distribution, and analysis of variance of multiple responses in basic statistical designs.

261. **Theory of Statistics 1.** I. 3 hr. PR: Math. 17. Probability and random variables, univariate and multivariate probability distributions, expectations, moment, marginal and conditional distributions, independence, correlation, transformations, and functions of random variables.

262. **Theory of Statistics 2.** II. 3 hr. PR: Stat. 261. Estimation including bias, consistency, efficiency and sufficiency, hypothesis testing, distribution-free problems, order statistics, linear models and analysis of variance, and special distributions.

291. **Special Topics.** I, II, S. 2-4 hr. Advanced study of special topics in statistics.

PHILOSOPHY

The Department of Philosophy encourages its majors to take either a general liberal arts and science course, or a strong minor in some recognized discipline within the University. During the first two years the student will meet most of the general requirements of the University and of the College. He must take Philos. 101, 102, 106, and 104 or 108. During the junior and senior years he will complete the work of his major and minor and round out his education through electives. The student who intends to major in Philosophy should, if pissible, take the required course, Philos. 106, before the beginning of the junior year. Upon consent of the Department of Philosophy, a student may elect to receive credit for selected courses in the 100 series (or below) by (a) independent study and (b) passing a comprehensive examination on the content of the given course.

Courses of Instruction

Lower Division

10. **Introduction to Logic.** I or II. 3 hr. This is an informal course on the nature of argument.

Upper Division

101. **History of Ancient Philosophy.** I. 3 hr. Major philosophies of the Western World from the pre-Socrates to Plotinus.

102. **History of Modern Philosophy.** II. 3 hr. PR: Philos. 101 or consent. Major philosophies of the Western World from Descartes to J. S. Mill.

104. **Theory of Knowledge.** I or II. 3 hr. The major philosophical problems associated with knowledge.

106. **Mathematical Logic I.** I. 3 hr. The logic of statements, predicates, and identity; elementary set theory (equiv. to Math. 106).

108. **Ethics.** I or II. 3 hr. Various theories on the nature of obligations, right and good, and the function of punishment.

110. **Problems of Philosophy.** I or II. 3 hr. An introduction to the major philosophical problems of past and present.

114. **Recent Philosophy.** I. 3 hr. PR: Philos. 101 or Philos. 102 or consent. Major philosophies of nineteenth and early twentieth centuries.

121. **Existentialism.** I or II. 3 hr. A survey of the major existentialist thinkers.

122. **Oriental Philosophy.** I or II. 3 hr. Major philosophies of Asia.

123. **Philosophy of Religion.** I or II. 3 hr. An attempt to discover the defensible foundations of religion.

130. **Philosophy of Art.** I or II. 3 hr. Philosophical problems raised by art and art criticism (assumes some acquaintance with arts).

140. **Philosophy of Education.** I or II. 3 hr. A study of the various theories on the nature of education (equiv. to Educ. 140).

150. **Social and Political Philosophy.** I or II. 3 hr. Application of moral concepts to questions concerning the individual and the state.

166. **Metaphysical Problems.** I or II. 3 hr. Traditional problems; e.g., causation, time, motion, personal identity, determinism.

206. **Mathematical Logic 2.** II. 3 hr. PR: Philos. 106 or consent. Formalization of the material in the previous term, the concepts of consistency, decidability, and completeness (equiv. to Math. 206).

214. **Theory of Knowledge.** I or II. 3 hr. PR: Philos. 106 and consent. Advanced topics in the theory of knowledge.

218. **Ethical Theory.** I or II. 3 hr. PR: Philos. 108 or consent. Selected, complete ethical theories and/or special problems in meta-ethics.

221. **Contemporary Philosophies of Continental Europe.** I or II. 3 hr. PR: Philos. 114. A study of the various European thinkers of the present day.

223. **Philosophy of Religion.** I or II. 3 hr. PR: Philos. 123 or consent. Advanced topics in the philosophy of religion.

230. **Aesthetic Theories.** I or II. 3 hr. PR: Philos. 130 or consent.

241. **Introduction to Analytic Philosophy.** I or II. 3 hr. PR: Philos. 102, 106. Contemporary schools of analytic philosophy.

250. **Social and Political Philosophy.** I or II. 3 hr. PR: Philos. 150. Advanced topics in social and political philosophy.

253. **Philosophy of Mathematics.** I or II. 3 hr. PR: Philos. 106 or consent. Contemporary viewpoints in the foundations of mathematics.

258. **Philosophy of Science I.** I or II. 3 hr. PR: Philos. 106 or consent. An analysis of the conceptual and methodological foundations of science.

259. **Philosophy of Science II.** I or II. 3 hr. PR: Philos. 258 and Philos. 106 or consent. Further topics including induction, confirmation and cognitive status of scientific theories.

264. **Empiricism.** I or II. 3 hr. PR: Philos. 101, 102. Locke, Berkeley, and Hume.

266. **Metaphysics.** I or II. 3 hr. PR: Philos. 166 or consent. Advanced topics in metaphysics.

268. **Rationalism.** I or II. 3 hr. PR: Philos. 101, 102. Descartes, Spinoza, and Leibniz.

270. **Greek Philosophy.** I or II. 3 hr. PR: Philos. 101 and Philos. 102 or consent.

272. **Philosophy of Law.** I or II. 3 hr. PR: Philos. 108 or Philos. 150. Selected topics in foundations and procedures of law.

278. **Medieval Philosophy.** I or II. 3 hr. PR: Philos. 101, 102. A study of the major philosophies of the western world from Plotinus to Descartes.

280. **Introduction to Metamathematics I.** I or II. 3 hr. PR: Consent. Survey of the methodology of the deductive sciences with emphasis on the theory of proof and effective operations therein (equiv. to Math. 280).

281. **Introduction to Metamathematics II.** I or II. 3 hr. PR: Philos. 280. This course deals with recursive function theory, Godel's proof and associated results (equiv. to Math. 281).

283. **Philosophy of History.** I or II. 3 hr. Typical theoretical problems such as the nature of historical explanation, relativism, and the status of speculative principles of history.

285. **Philosophy of Language.** I or II. 3 hr. PR: Philos. 106 or Philos. 104. An analysis of the nature of meaning and language.

287. **Philosophy of Mind.** I or II. 3 hr. PR: Philos. 241 or Philos. 114 or consent. Typical problems in this course have to do with whether there are minds, the difference between minds and bodies, other minds, and the analysis of mental concepts.

289. **Advanced Topics in Logic.** I or II. 3 hr. PR: Philos. 206 or Philos. 280.

290. **Seminar: Selected Topic.** I or II. 3 hr. PR: Consent.

291. **Seminar: Selected Topic.** I or II. 3 hr. PR: Consent.

292. **Seminar: Selected Author.** I or II. 3 hr. PR: Consent.

293. **Seminar: Selected Author.** I or II. 3 hr. PR: Consent.

299. **Problems in Philosophy.** I or II. 1-12 hr. PR: Consent.

THE PHYSICAL SCIENCES

1, 2. **Introductory General Course. I, II.** 4 hr. per sem. This course is intended to acquaint the student with the physical world in which he lives, and particularly with the method and philosophy of modern science in its approach to an explanation of physical reality. The course has two main objectives: to serve as orientation for those students who have not chosen their major field of interest, and to present a broad general view of the physical sciences to students whose interests lie in other fields. Two periods each week are devoted to lectures on the application of the scientific method to the solution of specific problems in chemistry, physics, geology, and astronomy. The third period is devoted to discussion of the mathematical background required for an appreciation of modern science, and to general lectures on the methods and philosophy of science. There is an optional period of individual instruction and the answering of student questions. The two-hour laboratory serves more to acquaint the student with the approach science takes to various problems than to confer specialized skills. Students who have successfully completed as much as eight hours of chemistry or physics or geology cannot take Phys. Sci. 1 and 2 for credit.

PHYSICS

Various courses offered in Physics are designed to meet the needs of students in the Colleges of Human Resources and Education, Engineering, Arts and Sciences, Agriculture and Forestry, and the School of Pharmacy.

Suggested Curriculum for A.B. Degree in Physics

The Bachelor of Arts degree is intended for those students who wish a foundation in physics but with a wider choice of elective subjects than is possible for those wishing to enter the field at a professional level. A total of 124 hours exclusive of Military Science or Air Force Aerospace Studies, Physical Education, and English 0 are required. The following are required: Physics 225-226, 231-232, 233-234 and at least 3 semesters of 200-level laboratory work.

FIRST YEAR				SECOND YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Year*	*Hr.*	*Second Sem.*	*Hr.*
Mil. or A.S. 1	2	Mil. or A.S. 3	2	Mil. or A.S. 3	2	Mil. or A.S. 4	2
Phys. Ed. 1	1	Phys. Ed. 2	1	Physics 109	2	Physics 110	2
English 1	3	English 2	3	Math. 117	4	Math. 140	3
Math. 15	4	Math. 116	4	Language 3	3	Language 4	3
Language 1*	3	Language 2	3	Elective Gr. A†	3	Elective Gr. B†	3
Physics 1	4	Physics 2	4	Chem. 15	4	Chem. 16	4
	17		17		18		17

*German, Russian and French are recommended.
†The letters A and B refer to the Core Curriculum group.

THIRD YEAR				FOURTH YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
Physics 100	3	Physics 100	3	Physics 200	3	Physics 200	3
Physics 200	3	Physics 200	3	Physics 200	3	Physics 200	3
Physics 200—Lab.	1	Physics 200—Lab.	1	Physics 200—Lab.	1	Elective Gr. B	3
Elective Gr. A	3	Elective Gr. A	3	Elective Gr. B	3	Elective	3
Elective Gr. B	3	Elective Gr. B	3	Elective	3	Elective	3
Elective	3	Elective	3	Elective	3		
	16		16		16		18

Suggested Curriculum for B.S. Degree in Physics

The following are required: Physics 225-226, 231-232, 233-234, and four semesters of 200-level laboratory work. Six to 12 hours of a second language (German, Russian or French) are strongly recommended.

THIRD YEAR				FOURTH YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
Physics 113	3	Physics 114	3	Physics 233	3	Physics 234	3
Physics 225	3	Physics 226	3	Physics 241	1	Physics 243	1
Physics 231	3	Physics 232	3	Physics 249	1	Physics 245	1
Math.	3	Math.	3	Physics 200	3	Physics 200	3
2nd Language 1	3	2nd Language 2	3	Elective Gr. A	3	Elective Gr. A	3
Elective Gr. B	3	Elective Gr. B	3	Elective Gr. B	3	Elective Gr. B	3
				Elective	3	Elective	3
	18		18		17		17

Laboratory Fees

A non-refundable fee is required of all students who take the following laboratory courses in Physics:

Course	*Per Semester*	*Course*	*Per Semester*
Physics 1	$ 5.00	Physics 102	$ 5.00
Physics 2	5.00	Physics 116	10.00
Physics 11	5.00	Physics 257	10.00

Courses of Instruction

Lower Division

1. **Introductory Physics.** I, II. 4 hr. PR: Plane geometry and algebra. Mechanics, sound, heat.

2. **Introductory Physics.** I, II. 4 hr. PR: Physics 1. Electricity, magnetism, and light.

11. **General Physics.** I, II. 4 hr. PR: Math. 15. Not open to students who have credit for Introductory Physics. Mechanics, sound, and heat.

Upper Division

102. **General Physics.** I, II. 4 hr. PR: Physics 11, Math. 15. Not open to students who have credit for Introductory Physics. Light, electricity, and magnetism.

109, 110. **Physics Problems.** 2 hr. Designed primarily for physics majors. To accompany Physics 11, 102.

113, 114. **Introductory Electronics.** I, II. 3 hr. per sem. PR: 1 year of college physics.

116. **Photography.** II. 3 hr. PR: 1 year of college physics, 1 year of college chemistry. The physics and chemistry of photography with practical application.

117. **Descriptive Meteorology.** I. 3 hr. PR: 1 year of college physics. Description of the atmosphere and its weather. Reading and analysis of weather maps. Weather observations.

118. **Physical Meteorology.** II. 3 hr. PR: Physics 117 or equiv. The physics of the atmosphere. Analysis of surface and upper air charts. Forecasting.

124. **Modern Physics for Engineers.** I, II. 4 hr. PR: Physics 11, 102. Aspects of physics of current engineering interest.

125, 126. **Modern Physics for Engineers.** I, II. 3 hr. per sem. PR: Physics 11, 102. Aspects of physics of current engineering interest.

201, 202, 203, 204. **Special Topics.** I, II. 1-3 hr. per sem.

213. **Introductory Electronics.** S. 3 hr. PR: 1 year of college physics. Primarily for Education majors, not for graduate credit for science majors.

218. **Dynamic Meteorology.** II. 3 hr. PR: Calculus, Physics 117 or equiv. Dynamics of lower atmosphere relating to transport and dispersion of foreign matter.

221. **Optics.** II. 3 hr. PR: Calculus, 1 year of college physics. Work with optical instruments, spectrometry, interferometry, and polarization.

225, 226. **Modern Physics.** I, II. 3 hr. per sem. PR: Calculus, Physics 11, 102, or equiv. Particle analysis, phenomena connected with the structure of the atom, and nucleus. Not open to those who have credit for Physics 125 and 126.

231, 232. **Theoretical Mechanics.** I, II. 3 hr. per sem. PR: Calculus, Physics 11, 102, or equiv. Theorems and problems in intermediate mechanics.

233, 234. **Introductory Electricity and Magnetism.** I, II. 3 hr. per sem. PR: Calculus, Physics 11, 102, or equiv. Electrostatics, magnetostatics, introduction of electrodynamics, and applications.

241, 242. **Mechanics Laboratory.** I. 1 hr. To supplement Physics 231, 232.

243, 244. **Electricity Laboratory.** II. 1 hr. To supplement Physics 233, 234.

245, 246. **Modern Physics Laboratory.** II. 1 hr. To supplement Physics 125, 126, or 225, 226.

247, 248. **Physics Seminar.** I, II. No credit. Required of junior, senior and graduate physics majors.

249. **Optics Laboratory.** I. 1 hr. PR: Physics 11, 102 or equiv. To supplement Physics 221.

254. **Outline of Modern Physics.** S. 3 hr. PR: 10 hr. college physics, 1 year college math. Selected topics in modern physics. Primarily for Education majors, not open to physics majors.

255, 256. **Workshop for Physics Teachers.** SI, SII. 3 hr. PR: 1 year college physics, 1 year college mathematics. Techniques of apparatus construction and demonstration. Primarily for Education majors, not open to physics majors.

257. **Photography.** SI. 3 hr. PR: 1 year college physics or equiv. Primarily for Education majors, not open to physics majors.

258. **Light.** SII. 3 hr. PR: 1 year college physics or equiv. Primarily for Education majors, not open to physics majors.

261, 262. **Molecular Physics.** I, II. 3 hr. per sem. PR: Physics 225, 226. Molecular spectra, molecular structure.

271, 272. **Solid State Physics.** I, II. 3 hr. PR: Physics 225, 226, or 125, 126.

283. **Thermodynamics.** I. 3 hr. PR: Calculus, Physics 11, 102 or equiv. Application of the fundamental law of thermodynamics to physical systems.

284. **Kinetic Theory.** II. 3 hr. PR: Calculus, Physics 11, 102 or equiv. Applications of Boltzman statistics to physical systems.

287, 288. **Introduction to Mathematical Physics.** I, II. 3 hr. per sem. PR: Calculus, Physics 11, 102 or equiv. Boundary value problems in vibration, heat conduction, introductory quantum mechanics and elasticity.

POLITICAL SCIENCE

The political science curriculum provides a systematized course of study of the origin, basis, and nature of the state in its many and varied aspects. These include: principles, organization, and structure of political institutions, both domestic and foreign; the processes and functioning of government; interrelationships between political institutions on various levels of government; political behavior; the control of government instrumentalities and the means for holding its agents responsible; and the identification and analysis of public problems falling within the range of government. Course offerings in the Department of Political Science provide a basic general knowledge of the field, as well as more extensive and intensive training in the specialized areas of political science, particularly on the senior and graduate levels.

Primary departmental objectives may be classified under four principal headings as follows:

1. To develop an understanding of the role of government in modern society, thus contributing to a general, liberal education and to preparation of students for a career in the public service.
2. To impart a basic knowledge and understanding of the techniques and processes of government and administration to those persons who look forward to a career in the public service.
3. To provide pre-professional training for students who are preparing to enter the legal profession.
4. To provide advanced and specialized instruction, through the Ph.D. degree, for persons who wish to enter teaching or research in the field of political science.

The political science curriculum, therefore, enables the major in this field to gain an understanding of the political society in which he lives and also to plan his academic program so as to prepare himself for a career of public service.

Courses Suggested for Political Science Majors

FIRST YEAR				SECOND YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem .*	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3	Pol. Sci. 1	3	Pol. Sci. 2	3
Group A	3-4	Group A	3-4	Group A	2-3	Group A	2-3
Group C	3-4	Group C	3-4	Group C	3-4	Group C (if necessary to fulfill Core Curriculum requirements.)	3-4
Foreign language	3	Foreign language	3	Foreign language (if necessary)	3	Foreign language (if necessary)	3
Phys. Ed.	1	Phys. Ed.	1	History 52	3	History 53	3
Mil. or A.S. 1	2	Mil. or A.S. 2	2	Phys. Ed. (W)	1	Phys. Ed. (W)	1
Psychol. 1 (or 2nd year)	3	Sociol. 1 *or* Geography 7 (or 2nd year)	3	Economics 51 (if possible)	3	Economics 52 (if possible)	3
				Mil. or A.S. 3	2	Mil. or A.S. 4	2
	15-19		15-19		15-19		15-19

THIRD YEAR				FOURTH YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
Pol. Sci. 200	3	Pol. Sci. Group V or Group IV	3	Pol. Sci. 170	3	Pol. Sci. 171	3
Pol. Sci. Group I	3	Pol. Sci. Group II or Group III	3	Pol. Sci. Group II or Group III	3	Electives, minors	6-9
Pol. Sci. Group IV or Group V	3	Elective, minors	3	Electives, minors	6-9	Pol. Sci. electives	6-9
Elective, minors	3	Econ. 52 (if not taken prev.)	3	Pol. Sci. electives	6-9		
Econ. 51 (if not taken prev.)	3	Pol. Sci. elective	3				
Electives	3-6	Electives	3-6				
	18-20		18-20		18-21		18-21

Requirements for Majors

Hours. Undergraduate majors in political science are required to take at least 27 hours of upper-division course work in the department. There must be a first minor consisting of 12 hours of upper-division courses, normally in history, economics, sociology, or psychology and a second minor of 6 hours of upper-division work in a related field.

Required Courses. Each undergraduate major is required to take Pol. Sci. 1 (3 hr.) or 2 (3 hr.). Departmental majors are encouraged to take both Pol. Sci. 1 and 2.

Distribution of Courses. The major in political science should work out his program in such a way as to secure a well-rounded knowledge of the field, as well as to concentrate in some particular area. Although the 27 hours of upper-division work in political science is the minimum requirement, students should take at least 33 hours.

The following are distribution requirements for an undergraduate major in political science:

1. At least one upper-division course in each of the six groups into which the offerings of the department are divided.
2. At least three upper-division courses in some one group.

Groupings of Upper-Division Courses by Fields

I. American National, State, and Local Government
Pol. Sci. 111, 113, 120, 121, 210, 211, 213, 214, 215, 216, 218, 221, 225, 226, 310, 311, 314, 320-321, 324, 325-326.

II. Politics and Policy Development
Pol. Sci. 130, 231, 232, 233, 234, 330-331, 334.

III. Public Administration
Pol. Sci. 140, 241, 244, 245, 246, 344, 346-347.

IV. Foreign and Comparative Government
Pol. Sci. 150, 250, 251, 252, 253, 254, 255, 256, 351-352, 354.

V. International Relations, Organizations and Law
Pol. Sci. 160, 261, 262, 263, 264, 265, 266, 267, 361-362, 364.

VI. Political Theory
Pol. Sci. 170, 171, 272, 273, 274, 374, 375-376.

Courses of Instruction

Lower Division

1. **Elements of Democratic Government.** I, II. 3 hr. Introduction to government. Origin, forms, and functions of the state; organization and forms of government; and the relations of groups and individuals to the state. Primarily for freshmen.

2. **The American Federal System.** I, II. 3 hr. A survey course in American national government. Intended primarily for freshmen and sophomores.

Upper Division

101. **Introduction to Government.** I, II. 3 hr. (Exclusively for students in the College of Agriculture and Forestry and the College of Engineering). A consideration of the basic principles and operation of national, state, and local government in the United States.

111. **Functions of American National Government.** I, II. 3 hr. The activities of the executive branch of government, particularly as they relate to social and economic development; expansion of government activities and services since 1932.

113. **American Constitutional Principles.** I. 3 hr. U.S. Constitution as interpreted by the Supreme Court. Treatment is analytical rather than historical. Text supplemented by some leading cases.

120. **State and Local Government.** I, II. 3 hr. Survey of the legal basis, structure, and operation of state and local governments, their relations with each other and their place in the federal system.

121. **Introduction to Urban Planning.** I, II. 3 hr. Structure of urban communities; history, processes, and objectives of planning; trends in planning and urban development.

130. **Political Parties and Electoral Processes.** I, II. 3 hr. The nature of political parties. Public regulation of parties and electoral processes. A close examination of suffrage, nominating devices, campaign procedures, and the conduct of elections.

140. **Introduction to Public Administration.** I, II. 3 hr. Introductory study of the development, organization, procedures, processes, and human relations factors of governmental administration in American democracy.

150. **Contemporary European Governments.** I, II. 3 hr. Comparative analysis by countries of constitutions, political structures, and functions, with major emphasis upon the United Kingdom, France, Russia, and West Germany.

160. **International Relations.** I, II. 3 hr. Introduction to contemporary world politics. Just enough background to make present-day international affairs more understandable.

170. **History of Political Thought: Plato to Machiavelli.** I. 3 hr. Examination of major political ideas from the Greeks to sixteenth century with special emphasis upon development of natural law and western conception of justice.

171. **History of Political Thought: Machiavelli to Bentham.** II. 3 hr. PR: Pol. Sci. 170 or consent. Analysis of the political ideas which developed from the separation of faith and reason, the culmination of this movement in rational integral liberalism, and the origins of modern conservatism as expounded by Edmund Burke.

200. **Research Materials and Techniques in Political Science.** I. 3 hr. Basic source materials in political science and of the techniques and methods of governmental research.

210. **American Political Institutions.** I. 3 hr. PR: Pol. Sci. 2 or consent. Development of the Constitution, Congress, the Presidency, and the Supreme Court as institutions with special attention to current problems and issues.

211. **Problems of American National Government.** II. 3 hr. This course is intended to give recognition to the major contemporary problems of government. Extensive readings of background materials as well as current literature.

213. **American Constitutional Law.** I. 3 hr. PR: Pol. Sci. 2 or consent. Basic principles of American constitutional law as developed through interpretation with special emphasis on constitutional theories and national development.

214. **Civil Rights and Liberties in the United States.** II. 3 hr. PR: Pol. Sci. 213 or consent. Scope and meaning of civil liberty guarantees in the United States Constitution, as illustrated by cases involving original constitutional provisions, the federal Bill of Rights, and Civil War Amendments (with special attention to the rule of law; free speech, press, religion, assembly, and petition; personal security; racial discrimination; and the labor problem).

215. **American Constitutional Development I.** I. 3 hr. PR: Pol. Sci. 2 or consent. A survey of American Constitutional development, with special emphasis on the origins of constitutionalism here; liberty vs. government; mixed government; separation of powers; the problem of federalism and the Philadelphia Convention of 1787; the Marshall court and establishment of judicial review; Federalist vs. States Rights construction of the Constitution; Jacksonian influences; the Taney Court prelude to the Civil War, secession, and conflict, heralding constitutional change.

216. **American Constitutional Development II.** II. 3 hr. PR: Pol. Sci. 2, 215 or consent. Continuation of a survey in American constitutional development, with special attention to Reconstruction, the Supreme Court, and the Fourteenth Amendment; laissez-faire and the commerce clause; stirrings of reform toward a constitutional revolution under the New Deal; changing federal-state relationships; the impact of war upon constitutional interpretation; an expanding role for the president in domestic matters and foreign relations; the Warren Court and triumph for libertarian activists over judicial restraintists in an era of civil liberties.

218. **Government and Business.** II. 3 hr. PR: Pol. Sci. 2 or consent. Government regulations of the economy dealing with the origin and development of public politics, constitutional and policies basis of regulation, relationships between political and economic institutions and processes, and an evaluation of the consequences of regulatory policies.

221. **West Virginia Government and Administration.** I, II. 3 hr. The organization and operation of the state government of West Virginia.

225. **Municipal Government.** II. 3 hr. Legal basis, structure, operation, and problems of municipal government and municipal relations with other governmental units.

226. **Problems of State and Local Government.** I. 3 hr. Current problems of state, county, and municipal governments. Students are expected to have completed Pol. Sci. 120 or its equiv.

231. **History of Political Parties.** I. 3 hr. The growth of political parties in the United States. Analysis of issues in presidential campaigns as they relate to political party development.

232. **Public Opinion and Propaganda.** II. 3 hr. Techniques of sampling and measuring public opinion; detection of propaganda; the nature of propaganda and methods of the propagandist.

233. **Current Political Issues.** I. 3 hr. Political party platforms and the major issues of the political campaign. Students will be expected to examine background materials thoroughly.

234. **The Legislative Process.** II. 3 hr. Structure and organization of legislative bodies. Power of legislature. Detailed study of lawmaking procedures. The influence of outside forces.

241. **Administrative Organization and Management.** I. 3 hr. PR: Pol. Sci. 140 or consent. Analysis of governmental administrative organization and reorganization and of such management functions as leadership, planning, coordination, and financial organization.

244. **Administrative Law and Regulations.** II. 3 hr. PR: Pol. Sci. 140 or consent. Study of the law of administration, primarily by the case method, covering administrative powers, procedure in administrative adjudiciation and rule-making, discretion, judicial control, and administrative liability.

245. **Public Administration and Policy Development.** II. 3 hr. PR: Pol. Sci. 140 or consent. Analysis of decision-making and policy development in the administrative process by the case method.

246. **Comparative Public Administration.** II. 3 hr. The theory and practice of public administration in diverse cultures and national political systems.

250. **Comparative Government.** I. 3 hr. Comparative study of modern political institutions with particular attention to European constitutional government and politics.

251. **Modern Dictatorships.** II. 3 hr. Politically undemocratic governments. Provides background of dictatorship generally, followed by treatment of several modern dictatorships.

252. **British Government and Politics.** I. 3 hr. Intensive study of British government with emphasis upon both internal and external policies, primarily during the twentieth century.

253. **The Commonwealth of Nations.** II. 3 hr. Analysis of the political relationships between the members of the Commonwealth and a comparative study of the governments of the Dominions with particular reference to Canada and Australia.

254. **Governments of Asia.** I. 3 hr. Contemporary politics and governments of Asia.

255. **Governments of Latin America.** I. 3 hr. Comparative study of the major nations of Latin America.

256. **Governments of the Middle East.** II. 3 hr. The governments and political forces of the Middle East.

259. **Political Tour of Europe.** 6 hr. PR: Pol. Sci. 1 and 2 or consent. Examination of governments and politics in selected European countries. Lectures and discussions supplement observation while visiting these countries.

261. **International Organization.** I. 3 hr. Emphasis will be placed upon agencies created since the close of World War II. Some reference to development of international law and League of Nations.

262. **Specialized Agencies of the United Nations.** II. 3 hr. A detailed treatment of the specialized agencies and related institutions.

263. **Public International Law.** I. 3 hr. Law governing relations among nations, including development of rules, means of enforcement, and conflicts between theory and practice.

264. **Conduct of American Foreign Relations.** I. 3 hr. Basic concepts about and factors influencing the decision-making process and the conduct of United States foreign policy, with special attention to the problems of ends and means of democracy, pressure interest groups (i.e., the military-industrial complex and the administrative bureaucracy); recent theories, analytical tools, and methodology in the problem areas of conflict-resolution, nonconsensus situations, and inter-nation influence; regional patterns, problems, and prospects of United States policy in Europe, Africa, Asia, the Middle East, and the Soviet bloc since 1945.

265. **Basic Factors in Power Politics.** II. 3 hr. PR: Pol. Sci. 2 or consent. Analysis of factors of power in the nation-state system. Evaluation of nationalism and concepts of national interest in modern world politics.

266. **Soviet Foreign Policy.** I. 3 hr. PR: Pol. Sci. 150 or 160 or consent. Basic concepts about and factors influencing choice in the formulation and execution of Soviet foreign policy; the development and present patterns in Soviet foreign relations with key states and the United Nations; possible problems and prospects in future Soviet relations.

267. **Latin America in International Affairs.** II. 3 hr. PR: Pol. Sci. 160 or 255 or consent. A survey of the relations of Latin American states among themselves, to the United States of America, to the United Nations, to other regional organizations, and to non-Western states. Analyzed in depth are the Monroe Doctrine and its corollaries, and the Inter-American system.

272. **Recent and Contemporary Political Thought.** I. 3 hr. Integral liberalism and the forces leading to the decline of liberalism and a crititcal analysis of the fascist and communist ideologies with their threat to the traditions of western civilization embodied in Christianity and conservatism.

273. **American Political Theory.** II. 3 hr. PR: Pol. Sci. 171 or consent. Major political ideas and their influence upon American society and government from the seventeenth century to the present.

274. **Problems in Contemporary Political Thought.** II. 3 hr. An intensive study of current trends in political thought through examination of the works of contemporary writers.

PSYCHOLOGY

Laboratory Fees

A non-refundable fee is required of all students who take the following laboratory course in Psychology:

Course	*Per Semester*
Psychology 122	$8.00

Courses in psychology are designed for one or more of the following ends: to promote a better understanding of human nature and behavior; to lay a foundation for graduate professional training; and to inculcate useful skills of psychological technology.

The emphasis of pre-professional undergraduate training in psychology should be on broad education in the humanities and in the behavioral, biological, physical and social sciences. During the first two years the student will meet most of the general requirements of the University and of the College. He will also take Psychology 1 and 2, 111, 121, and 122. During the junior and senior year he will complete the work of his major and minor and round out his education through electives. If the student intends to pursue psychology as a career, excessive undergraduate specialization is discouraged.

Courses of Instruction

Lower Division

1. **Introduction to Psychology.** I, II. 3 hr. Survey of general psychology.

2. **Psychology Laboratory.** I, II. 3 hr. PR: Psych. 1. Lectures, demonstrations, and laboratory exercises in sensory processes, perception, learning.

20. **Psychology of Personal Efficiency.** I, II. 0 hr. For students whose scholastic achievement is below capacity. Diagnostic and remedial practice in areas which hamper personal or academic efficiency. For freshmen and sophomores; others by consent.

Upper Division

101. **Leadership and Human Relations.** I and II. 3 hr. PR: Psych. 1. Leadership training, motivation and morale, human relations, safety, industry and society.

111. **Statistical Methods in Psychology.** II. 3 hr. PR: Psych. 1. Analysis and interpretation of psychological data.

121. **Experimental Psychology.** I. 3 hr. PR: Psych. 1. Principles of experimental method, psychophysics and sensory processes surveyed at intermediate level.

122. **Experimental Psychology.** I, II. 3 hr. PR: Psych. 1. Lectures and lab. Principles of learning surveyed at intermediate level. Lab exercises and demonstrations.

151. **Social Psychology.** I. 3 hr. PR: Psych. 1. Social factors which determine human behavior. The relationship of class, race, culture, social structure and other group phenomena to individual behavior. Other topics include: attitudes, public opinion, propaganda, mass media of information and national character.

202. **Job Analysis.** I or II. 3 hr. PR: Psych. 203 or consent. Instruction and supervised practice in the preparation of job analyses and in the use of occupational descriptions. Especially designed for students in psychology, guidance, engineering, management, and rehabilitation counseling.

203. **Personnel Psychology.** I or II. 3 hr. PR: Psych. 1 and a course in statistics. Application of psychological principles and techniques to the problems of measurement and prediction of proficiency in industry and society. Topics include proficiency measurement, personnel selection by tests and interviews, conditions of work and productivity, engineering psychology, work methods, and safety.

211. **Statistical Methods in Psychology.** I or II. 3 hr. PR: Psych. 111 or equiv. Sampling theory, probability, further parametric and non-parametric statistics.

212. **History of Psychology.** I or II. 3 hr. PR: Psych. 1. Traces the development of the science and concepts of psychology from their origin in philosophy, physiology, and medicine up to the modern era.

213. **Directed Studies.** I, II. 1-3 hr. per sem.

215. **Analysis of Variance.** I or II. 3 hr. PR: Psych. 211 or consent. A discussion of tests of homogeneity of variance, parametric and non-parametric analysis of variance, and analysis of covariance. Implications of these techniques for experimental design will be considered.

217. **Multivariate Analysis.** I or II. 3 hr. PR: Psych. 211 or consent. Correlational methods in psychology with application to typical research problems. Includes simple matrix algebra, multiple correlation, discriminant analysis, and an introduction to factor analysis.

221. **Sensory Processes.** I or II. 3 hr. PR: Psych. 121, 122. Psychophysics of vision and audition are analyzed and related to current theories. Methods of research in sensory processes are reviewed.

223. **Perceptual and Cognitive Processes.** I or II. 3 hr. PR: Psych. 121 and 122 or equiv. Consideration of classical and contemporary research and theory on perception and cognitive processes, including concept formation and thinking.

224. **Motivation.** I or II. 3 hr. PR: Psych. 121, 122, or equiv. Survey of experimental data and theory in the area of motivation especially as it relates to learning.

227. **Conditioning and Learning.** I or II. 3 hr. PR: Psych. 121, 122. Outline of current research in operant and classical conditioning. Controversial issues in learning are reviewed in light of recent research and theory.

231. **Physiological Psychology.** I or II. 3 hr. PR: Psych. 121, 122, and Zool. 271 or equiv. The organic basis for psychological activities such as perception, emotion, motivation and learning.

232. **Comparative Psychology.** I or II. 3 hr. PR: Psych. 121, 122. A comparison of the structure of representative animals of the various phyla in relation to differences in behavior.

243. **Child Behavior.** I or II. 3 hr. PR: Psych. 1. Growth trends in behavior through adolescence, including development in the physical, intellectual, emotional, social, and personality areas.

247. **Adolescence and Early Adulthood.** I or II. 3 hr. PR: Psych. 243, 263, 281, or equiv., and consent. Psychosexual, psychosocial, and other focal problems of development will be stressed. The role of high school and higher education in growth and development will be examined.

251. **Advanced Social Psychology.** I or II. 3 hr. PR: Psych. 151 or consent. A consideration of contemporary theory and practice in social psychology. A research project is generally assigned.

252. **Group Dynamics.** (Same as Sociol. 270). I or II. 3 hr. PR: Psych. 1, Sociol. 1 or permission. An interdepartmental course, combining psychological and sociological approaches, in which the dynamics of groups in operation are considered. The following topics are treated: leadership, informal communication and group processes, the relation of group aims to group organization, and the effect of the group on personality.

253. **Attitudes and Propaganda.** I or II. 3 hr. PR: Psych. 1 or consent. Includes: the nature of attitudes and opinions, attitude measurement, opinion changing, propaganda use and analysis, the social psychology of mass media, democratic values and public opinion. Designed to meet the needs of students from a variety of fields as well as psychology—especially sociology, political science, and journalism.

261. **Individual Differences.** I or II. 3 hr. PR: One course in psychology. Nature and extent of differences among individuals in such traits as intelligence, achievement, personality, and interests as affected by hereditary and environmental differences and by such variables as schooling, socioeconomic status, sex, age, and race. Primarily for students of psychology and education.

262. **Group Psychometric Testing.** I or II. 3 hr. PR: Psych. 1 and 111 or equiv. Theory underlying the construction and use of psychometric measurement techniques for evaluating aptitude, interest, personality, and attitudes.

263. **Introduction to Personality.** I or II. 3 hr. PR: Psych. 1. The development and significance of the personality concept in psychology including a survey of the major theories such as Freudian, interpersonal, trait and learning.

264. **Psychology of Adjustment.** I or II. 3 hr. PR: Psych. 1 or consent. Dynamic principles of human personality adjustment.

271. **Introduction to Clinical Psychology.** I or II. 3 hr. PR: Psych. 263, 281 or consent. A review of concepts, techniques and professional roles in clinical psychology. Foundation for advanced courses in clinical methods and skills. Of interest to advanced undergraduates and graduates in education, guidance, personnel, pre-medicine and social work as well as professionally-oriented students in psychology.

281. **Abnormal Psychology.** I or II. 3 hr. PR: Psych. 1. A survey of the major behavioral disorders—neurosis, psychosis, and character disorder. Emphasis is placed on the developmental dynamics leading to these disorders, and the psychological treatments of them.

282. **Exceptional Children.** I or II. 3 hr. PR: Child or educational psychology. Study of children who present psychological problems because of: (1) exceptional mental retardation or advancement; (2) organic disabilities having behavior consequences, such as cerebral palsy or deafness; (3) disorders of conduct associated with atypical personality functioning. Of special interest to those who regularly deal with children such as teachers, nurses, etc.

RELIGIOUS STUDIES

100. **Introduction to the Gospels.** I. 3 hr. A study of the four Gospels of the New Testament, involving a brief introduction to the literature and historical setting of the Gospels with an intensive study of the Christ event.

101. **A Study of Paul.** II. 3 hr. An introduction to the life and theology of Paul, involving a study of the letters of Paul and other pertinent early Christian literature.

102, 103. **Introduction to the Old Testament.** I, II. 3 hr. ea. A brief introduction to Old Testament literature, its historical background, its great personalities, and the development of beliefs and customs of importance both to Jews and to Christians. The second semester will deal primarily with the prophets. Each semester may be taken independently.

120, 121. **History of Christian Thought.** I, II. 3 hr. ea. A study of significant men and movements of thought among the Christians and of the way in which these contributed to answering the perennial questions of religion from a Christian perspective. The first semester will cover the history of Christian thought to 1500. The second semester will continue the study. Each semester may be taken independently.

150. **Sophomore Honors Course in Religious Studies.** 3 hr. Open only to honors students. A study of fundamental tenets of Judaism and Christianity; also an introduction to their Scriptures, their origin and growth as well as certain problems contained in them. The course will constantly strive to show the contemporary relevance of each topic discussed. Readings from great Christian and Jewish thinkers of all ages will be assigned weekly.

210, 211. **Problems in Contemporary Christian Thinking.** I, II. 3 hr. ea. Issues to be treated include the following: the function of reason in the Christian faith, the Christian understanding of history, the ecumenical and other recent movements within the Church, recent transformations of ethical and social thinking, and new interpretations of traditional Christian doctrines. It is highly recommended, but not required, that Religious Studies 100, 101, 102, 103, 120, or 121 be taken as a background for this course. Each semester may be taken independently.

212. **Judaeo-Christian Teachings About the Problems of Man.** I. 3 hr. PR: Either a 100 Religious Studies course or consent. (Offered for first time in Fall, 1967). A presentation of the dialog between the existential problems of man, e.g., anxiety, loneliness, meaninglessness, guilt, death, lust, wrath, and others, and the response of the Judaeo-Christian faith. The course embraces an introduction to existential theology. (To be given in 1967-68 and alternate years.)

222. **History of American Religion.** I. 3 hr. PR: A Religious Studies course or consent. A study of the origins, growth, and significance of the major religious ideas and movements, Protestant, Catholic, and Jewish, and including the sects and cults which have been particularly influential in shaping the religious life of the American people. (To be given in 1967-68 and alternate years.)

223. **Roman Catholic Thought: From the Council of Trent to Vatican Council II.** II. 3 hr. PR: A 100 Religious Studies course or consent. Roman Catholic thinkers and movements in doctrinal, biblical, historical, and social thought; the reform and renewal movement of Vatican Council II; the role of Roman Catholicism in contemporary society. (To be given in 1967-68 and alternate years.)

230. **World Religions: Religions of India.** I. 3 hr. Hinduism, Jainism, Sikhism: historical and theological foundations; developments of thought; contemporary expressions and encounter with the modern world. (To be given in 1967-68 and alternate years.)

231. **World Religions: Religions of China and Japan.** II. 3 hr. Buddhism, Confucianism Taoism, Shinto: historical and theological foundations; developments of thought; contemporary expressions and encounters with the modern world. (To be given in 1967-68 and alternate years.)

240, 241. **Theology of Culture.** I, II. 3 hr. ea. PR: A 100 Religious Studies course or consent. An interdisciplinary course involving members of various parts of the faculty of the University in dialog with a professor of religious studies. An encounter between theology and the various secular fields of study. Each semester may be taken independently. (To be given in 1968-69.)

SOCIAL SCIENCE

1, 2. **Introductory General Course.** I, II. 3 hr. per sem. The interdisciplinary course in social science aids the student in his preparation for citizenship by advancing his understanding of the social order. In the first semester the concepts and forms of organization pertinent to economics, political science, and sociology are treated. In the second semester these social sciences are applied to the analysis of problem conditions such as economic dislocations and poverty, race relations and civil rights, and international relations. Three lectures and one optional discussion group per week.

SOCIOLOGY

The study of sociology should help the student increase his understanding of the society in which he lives. An undergraduate major in sociology provides basic preparation for teaching the social sciences in high school and for professional careers in social work and other fields involving interpersonal relations. Able students completing the undergraduate major in sociology are well equipped to enter graduate study in the discipline.

A major in sociology normally consists of 24 hours of upper-division courses including as a rule Sociology 202: *Introduction to Social Research;* Sociology 246: *Types of Sociological Theory,* and a course in basic statistics.

A student planning to major in sociology normally elects Sociology 1 during his freshman year and Sociology 51 and 104 during his sophomore year.

All students who began their college or university work here or elsewhere in September 1964 or later must fulfill the requirements of the University's Core Curriculum. In doing so, the prospective Sociology major may elect Core courses of his choice. He must also satisfy all degree requirements stipulated by the College of Arts and Sciences.

Courses of Instruction

Lower Division

1. **Introduction to Sociology.** I, II. 3 hr. Basic concepts; fundamental institutions and functions of society.

2. **Introduction to Sociology, (Continued).** II. 3 hr. A continuation of Sociol. 1 for students in the Honors Program. (Not open to other students.) The application of sociological principles to the analysis of selected aspects of American social life.

51. **Introduction to Anthropology.** I, II. 3 hr. Introductory survey of the field of anthropology, with emphasis on the nature of culture. Behavior of man illustrated by the simpler societies.

Upper Division

Prerequisites for Sociology courses in the "200" series: Sociol. 1 or 51, or Social Sci. 1, 2 (or equivalents).

104. **Social Problems.** I, II. 3 hr. Examinations, within a sociological framework of such topics as labor-management relations, social class conflict, family dis-

organization and parent-child relations, race relations, juvenile delinquency and crime, religious adjustment, and social planning.

202. **Introduction to Social Research.** I, II. 3 hr. Trends in social research; examination of methods and techniques.

205. **Urban Sociology.** II. 3 hr. Sociological analysis of institutional structure, social values, and individual goals in urban-industrial society, bureaucratization, collectivization, and mass culture; emphasis on political, economic, religious, and family institutions.

206. **Sociology of Rural Life.** II. 3 hr. Social aspects of rural living. Characteristics of rural population, social structure, and institutional arrangements: family, community, education, religion, recreation, health, welfare, and local government.

208. **The Community.** S. 3 hr. An analytical course intended chiefly to provide background data for students interested in programs of community action. Topics to be included are: the basic characteristics of communities; community institutions and resources; social cleavages within the community; and community survey and community planning.

210. **The Family.** I, II. 3 hr. Sociological analysis of the contemporary family and its problems.

211. **Sociology of Childhood.** II. 3 hr. Adjustment of child to American culture.

216. **Sociology of Education.** (Same as Educ. 216). I, II. 3 hr. An examination of education as a social institution; cultural and class influences on education; social roles and career patterns in the school system; the school and problems of the community.

220. **Social Change.** I. 3 hr. Sociological analysis of the major changes now going on in our society, of the forces underlying them, and of the tensions to which they give rise. Alternative future directions; rational manipulation and planning for social change.

224. **Social Stratification.** I. 3 hr. Description and analysis of various types of stratification systems such as class and caste; social mobility, and status-striving. The course emphasizes the place of status, prestige, and power in the structure of American society.

229. **Population and Migration.** I. 3 hr. Population theories, growth, composition, and distribution of American population; immigration and culture pluralism; internal migrations and their consequences.

231. **Race Relations.** I. 3 hr. Race relations in the U.S. with emphasis on the American Negro.

233. **Criminology.** I. 3 hr. Explanation of crime; critical study of criminal justice, penal methods, and reform movements.

234. **Juvenile Delinquency.** II. 3 hr. A scientific study of the nature, extent, and causes of delinquency in the United States. Methods of treatment, correction, and prevention, with emphasis on the work of the juvenile courts.

235. **Collective Behavior.** I. 3 hr. Analysis of new group formation and behavior following social dislocation, social unrest, crowd behavior, and other forms of social contagion; the public and public opinion; social movements.

244. **Culture and Personality.** II. 3 hr. Significant interrelations between the individual and his culture.

246. **Types of Sociological Theory.** I, II. 3 hr. Examination of leading schools of sociological thought in our day.

250. **Human Relations in Industry.** II. 3 hr. The sociology of industrial relations. The factory or business firm as a social system. Formal and informal relations within the plant.

260. **Complex Organizations.** II. 3 hr. A sociological analysis of large-scale organizations emphasizing their structure and functions. The course will examine the place in contemporary society of such organizations as the military, prisons, and hospitals.

265. **The Sociology of Latin America.** II. 3 hr. A systematic sociological consideration of the problem of "underdeveloped" countries, with special emphasis on the culture, social structure, and national character of Latin American countries. The main focus will be on social change.

270. **Group Dynamics.** (Same as Psych. 270). I. 3 hr. An interdepartmental course, combining psychological and sociological approaches, in which the dynamics of groups in operation are considered.

275. **Cultural Dynamics.** I. 3 hr. The nature of culture and cultural change. Historical trends in the study of cultural dynamics: focal interests, doctrines, and methods of study.

281. **African Society and Culture.** II. 3 hr. Analysis of contemporary societies and cultures south of the Sahara, with some emphasis on current changes.

282. **Latin-American Society and Culture.** II. 3 hr. A survey of the Post-Conquest societies and cultures, with emphasis on present-day sociocultural arrangements.

285. **Introduction to Archaeology.** I. 3 hr. Survey of archaeology: its methods and significance for the understanding of prehistoric cultures.

286. **Archaeology of Appalachia.** II. 3 hr. Intensive study of the content, distribution, sequence, and significance of early Appalachian Indian cultures.

SPEECH

The curriculum of the Department of Speech is so organized that a student may receive basic training in the cultural and practical aspects of any one or more of the three fields of speech: (1) rhetoric and public address; (2) radio, television, and motion pictures; (3) general speech and the teaching of speech. In all courses of training, professional standards of achievement are emphasized.

Major Requirements. The minimum number of hours in speech for a major is 36 semester hours of credit, including the following required courses: Speech 10, 31, 34, 80, 120, 121 and SPA 250. Electives taken in addition to these required courses must be upper-division courses and may represent concentration in one field or an appropriate distribution in all fields. A total of 42 semester hours in speech may be counted toward graduation.

Forensic Activities. Intramural and intercollegiate forensics, including debate, oratory, and extemporaneous speaking, receive due attention. Speech tournaments, as well as campus and television debates, are included in the program. Participation in the activities may lead to membership in Delta Sigma Rho-Tau Kappa Alpha, forensic honor society.

Radio, Television, and Motion Picture Programs. Faculty-directed programs in radio, television, and motion pictures offer students opportunity to participate in productions which utilize studio facilities both on the campus and in cooperating commercial stations in the area.

Off-Campus Speech Services. The Department of Speech sponsors and furnishes student programs for off-campus performances before civic and women's clubs, community organizations, and church and other groups throughout the community and the State.

Suggested Distribution of Courses for A.B. Degree in Speech

(The University Core Curriculum requirements to be observed and included.)

FIRST YEAR				SECOND YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3	Foreign language	3	Foreign language	3
Science	4	Science	4	History 52	3	History 53	3
Foreign language	3	Foreign language	3	Pol. Sci. 1	3	Pol. Sci. 2	3
Speech 10	3	Speech 31	3	English Lit.	3	English Lit.	3
Mil. or A.S. 1	2	Mil. or A.S. 2	2	Speech 34	3	Speech 80	3
Phys. Ed.	1	Phys. Ed.	1	Mil. or A.S. 3	2	Mil. or A.S. 4	2
				Phys. Ed. (W)	1	Phys. Ed. (W)	1
	16		17		18		16

Rhetoric and Public Address Curriculum

THIRD YEAR				FOURTH YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
Speech 120	3	Speech 121	3	Speech 220	3	Speech 270	3
Speech 125	3	Speech 250	3	Speech 221	3	Speech Elect.	3
Speech Elect.	3	Speech Elect.	3	Speech Elect.	3	Electives to	9
Core or other Electives to	9	Core or other Electives to	9	Electives to	9		
	18		18		18		16

Radio, Television, and Motion Pictures Curriculum

THIRD YEAR				FOURTH YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
Speech 120	3	Speech 121	3	Speech 282	3	Speech 280	3
Speech 181	3	Speech 250	3	Speech 283	3	Speech 284	3
Speech 184	3	Speech 185	3	Electives	7-12	Electives	9-12
Core or other elect.	7-9	Core or other elect.	7-9	*Recommended Electives:*		*Recommended Electives:*	
Recommended Electives:		*Recommended Electives:*		Speech 221		Speech 223	
Speech 89, 182		Journ. 18, 182, 281		Journ. 243, 289		Journ. 282, 288	
Journ. 182, 286		Speech 189		Drama 104, 281		Drama 150, 176, 185	
Drama 50, 75, 102		Drama 103, 180					

General Speech and Teaching of Speech Curricula

In consultation with the chairman of the department, programs in General Speech and the Teaching of Speech are structured to fit the specific needs and career goals of each student following these curricula. Those students seeking certification in elementary or secondary education must also fulfill the requirements of the College of Human Resources and Education.

Courses of Instruction

Lower Division

3. **Voice and Diction.** I, II. 3 hr. Three class meetings per week, one lecture, two programmed-laboratories. Theoretical basis for attitudes and standards to proper speech, general problems of voice and diction, including individual analyses. Students are acquainted with special problems in the voice sciences and arts of breath control, tone production, resonance, and connected dis-

course. Emphasis is placed upon the desirability of a strong, flexible, resonant voice for clarity of communication. The phonetic approach to speech is used to analyze and to remedy diction problems. Voices are regularly tape-recorded, with corrective exercises provided through a programmed-laboratory method. Not open to Speech Majors.

10. **Communication in a Democratic Society.** I, II. 3 hr. The nature, psychology, process and effects of communication in its various forms in our society. Open to all students. Required of those majoring in Speech.

11. **Principles of Oral Communication.** I, II. 3 hr. Group and individual communication approach. The subject matter of group communication will include conference speaking, techniques of interviewing, group dynamics, problem-solving, and decision making. The subject matter of individual communication will cover various aspects of inter-personal communicative situations such as informative, persuasive, and special-occasion speaking, as well as listening techniques.

31. **Basic Speech Skills.** I, II. 3 hr. Required of and limited to Speech Majors (including those majoring in Drama, and Speech Correction and Audiology). The phonetic approach to language. Improvement in clarity, audibility, variety, vocal quality, and correct use of language. Emphasis upon the development of vocal skills in accurate communication of ideas and feelings.

34. **Basic Speech Skills.** I. 3 hr. Required of and limited to Speech Majors. Study of and practice in extemporaneous speaking. Integration of the spoken word, voice, and action for accurate communication of ideas and feelings. Stress upon selection, organization, and presentation of materials in effective oral language.

60. **Junior Varsity Debate.** I. 1-2 hr. PR: Consent. Intercollegiate debate training and participation preparatory to varsity debate team competition. Open to freshmen and sophomores who wish to take part in intercollegiate debating.

61. **Junior Varsity Debate.** II. 1-2 hr. PR: Consent.

75. **Parliamentary Procedure.** I, II. 1 hr. Study of and practice in establishing rules of order and methods of conducting meetings, assemblies, societies, etc.

PUBLIC SPEAKING

Upper Division

120. **Group Discussion.** I, II. 3 hr. PR: Speech 11 or 34. Theory and the practice of various forms of group discussion. Principles, methods, and types of discussion as applied to contemporary problems.

121. **Argumentation and Debate.** I, II. 3 hr. PR: Speech 11 or 34. Study of the principles of research and use of evidence and reasoning in argumentative communication. Classroom debates test the student's ability to organize ideas and to analyze critically logic and evidence presented to support a proposition.

123. **Advanced Argumentation and Debate.** I. 3 hr. PR: Speech 121 or consent. Intensified training in the principles and techniques of argumentation and debate. Designed especially to prepare the student for participation in intercollegiate debate competition.

124. **Advanced Argumentation and Debate.** II. 3 hr. PR: Consent.

125. **Advanced Public Speaking.** I. 3 hr. PR: Speech 11 or 34. Techniques in composition and delivery of public speeches. Attention to parliamentary procedure.

126. **Speech for Business and Industry.** II. 3 hr. Designed particularly to meet the needs of business executives, supervisors, foremen, public relations personnel,

salesmen, etc. Study of and performance in public speaking, conference methods, making reports, committee work, management leadership, group controls, and personnel relationships.

220. **Speech Composition.** II. 3 hr. PR: Speech 11 or 34 and consent. Materials of speech, organization, and style; application to delivery.

221. **Persuasion.** I. 3 hr. PR: Speech 11 or 34 and consent. Study and practice in identification of factors motivating human behavior and belief, how to secure and hold attention, the uses of suggestion, the dramatization of ideas. Application to advertising and writing as well as speaking. Adapted to needs of pre-law, commerce, and journalism students.

222. **Forms of Public Address.** II. 3 hr. PR: Consent. Composition and delivery of the oration, political speech, speech of introduction, dedicatory address, and eulogistic speech.

223. **Advanced Group Discussion.** II. 3 hr. PR: Consent. Application of the principles and practices of group discussion to classroom teaching, the conference tables, committee work, policy-determining groups, and the public forum. Opportunities for participation by members of the class using current national and international problems.

225. **Interscholastic Forensics.** S. 3 hr. PR: Consent. Interscholastic public-speaking activities with emphasis upon types commonly termed original speech, such as debate, oratory, and extemporaneous speaking. Opporunity for performance in each type will be provided.

RADIO, TELEVISION, AND MOTION PICTURES

Upper Division

80. **Introduction to Broadcasting.** I, II, S. 3 hr. Survey of the industry and its role in today's society. Historical development of broadcasting, its responsibilities, and job opportunities. Organization of stations and their relation to networks. Federal regulations and industry codes. Technical aspects of radio and television. Brief consideration of programming and production techniques. Field trips to area commercial and educational stations. (Also listed as Journalism 80).

89. **Appreciation of the Motion Picture.** I, II. 3 hr. Viewing lab. An introduction to the appreciation of the motion picture and the television film as art forms. Principles of aesthetics involved in evaluating films. Attention given to the various types of film: art film, documentary, entertainment, experimental, instructional, etc. Weekly viewing and evaluation sessions. Open to all students. (Also listed as Journalism 89).

181. **Radio and Television Announcing.** I and II. 3 hr. PR: Speech 80 or consent. Procedures and routines of announcing in both media. Staff assignments, regulations, logged broadcasting operation, reports, and emergency procedures. Practice in reading of news, commercial and other types of broadcast copy. In-class production experience.

182. **Elements of Sound Reproduction.** I or II. 3 hr. PR: Speech 80 or consent. A survey of the nature of sound, with emphasis on recording and reproduction techniques. Consideration given to acoustics, microphone operations, record manufacture, and fundamentals of speaker operation. In-class production experience, and visits to area broadcasting stations. Open to all students.

184. **Broadcast Continuity Writing.** I 3 hr. PR: Speech 80 or consent. Formats of all types of radio and television writing except dramatic scripts. Continuity for talks, interviews, discussions, music, variety, documentary programs, and commercial copy. Students will participate in studio productions of writing projects.

185. **Fundamentals of Television Production.** II, 3 hr. PR: Speech 80 or consent. Elementary treatment of technical aspects. Station organization and personnel. Theory of camera operation and picture composition; video tape principles. Techniques of television directing and staging. Field trips to educational and commercial stations for observation for the production of programs. Lecture and laboratory.

189. **Techniques of Motion Picture Production.** I or II. 3 hr. Laboratory fee. An introduction to basic film making principles, with considerations given to motion picture directing, editing, lighting, cinematography, and sound recording. Lecture and laboratory. (Also listed as Journalism 189).

280. **Radio and Television Dramatic Writing.** II. 3 hr. PR: Speech 80, and Speech 184, or consent. Theory and practice of the basic principles of broadcast dramatic script writing. Experience in writing adaptations, and original comedy, tragedy, melodrama and fantasy type scripts, as well as poetry programs, serial dramas, children's shows and documentaries for commercial and educational purposes. Scripts are written for definite markets.

282. **Radio Workshop.** I. 3 hr. PR: Speech 181 or 182, or consent. Brief discussion of techniques of radio production. Advanced laboratory experience in the production of University radio programs. Adapted to students interested in commercial and educational broadcasting.

283. **Television Workshop.** I. 3 hr. PR: Speech 188 or consent. Brief discussion of techniques of television production. Advanced laboratory experience in the production of University television programs. Adapted to students interested in commercial and educational broadcasting.

284. **Radio and Television Program Planning.** II. 3 hr. PR: Speech 80 and consent. Analysis of the purpose and basic idea of a program in relation to audience composition. Requirements of effective structure. Practice in laying out program formats for all types of radio and television programming.

RELATED COURSES

Upper Division

170. **Directed Speech Activities.** I, II. 1-3 hr. PR: Consent of chairman of department. Chairman of department may grant credit for any extracurricular speech activity or study which is assigned to and directed by a member of the speech staff.

°SPA 250. **Survey of Oral Communication Disorders.** II. 3 hr. PR: Consent. A survey of basic concepts and principles of the disorders of speech and their treatment. Primary attention is given to the more common speech deviations. Students observe examination and corrective methods of therapists in the clinic and schools. Normal speech and hearing development of children is considered. This is an orientation course for students majoring in speech as well as teachers, school administrators, psychologists, and rehabilitation workers.

270. **Psychology of Speech.** II. 3 hr. PR: Consent. Modern psychological principles of speech learning and usage. Influences of emotion, conditioning, and habit on listening, thinking, language, learning, judgments, imagery, and personality as factors in oral communication.

275. **Speech Problems of Children.** S. 3 hr. PR: Consent. Normal maturational development of listening and speaking skills, their relationships to language acquisition, and their influences upon achievement in reading and writing. Primarily for elementary and secondary school teachers and principals, language arts supervisors, speech therapists, and students in guidance and counseling.

°SPA = Speech Pathology and Audiology.

The College of Commerce

ADMINISTRATIVE OFFICERS

Thomas C. Campbell, Jr., Ph.D., *Dean of the College of Commerce* (1964), 1948.
Joseph Newhouse, M.S., *Director of the Undergraduate Programs and Administrative Assistant to the Dean* (1966), 1949.
James H. Thompson, Ph.D., *Director of the Bureau of Business Research* (1951), 1948.

FACULTY

Vance Q. Alvis, Ph.D., *Professor of Economics* (1960), 1956.
Charles P. Austin, M.B.A., *Instructor in Economics and Management* (1963).
Thomas C. Campbell, Jr., Ph.D., *Professor of Economics* (1949).
Robert B. Conner, M.B.A., *Instructor in Management* (1965).
Howard O. Croasmun, B.S., *Lecturer in Accounting* (1956).
Virginia H. Cross, M.B.A., C.P.A., *Lecturer in Economics and Accounting* (1963).
Lynn Edwin Dellenbarger, Jr., Ph.D., *Associate Professor of Finance* (1964).
Betty G. Fishman, M.A., *Lecturer in Economics* (1957), 1948.
Leo Fishman, Ph.D., *Professor of Economics and Finance* (1952), 1947.
John R. Goodwin, LL.B., *Assistant Professor of Business Law.*
Raymond M. Haas, D.B.A., *Associate Professor of Marketing* (1965), 1961.
Carl W. Hale, Ph.D., *Associate Professor of Economics* (1966).
Paul W. Hamelman, Ph.D., *Associate Professor of Management* (1964), 1960.
Sandra R. Henderson, M.A., *Instructor in Economics* (1964).
Thomas S. Isaack, D.B.A., *Professor of Management* (1960), 1951.
Edward A. Johnson, M.I.L.R., *Assistant Professor of Management* (1966).
Jay E. Johnson, M.B.A., C.P.A., *Assistant Professor of Accounting* (1961), 1956.
George E. Kirk, M.B.A., *Assistant Professor of Management* (1964).
Dennis R. Leyden, B.S., *Assistant Professor of Economics* (1962).
Raymond R. McKay, M.S., *Assistant Professor of Economics* (1966).
Robert S. Maust, M.S., C.P.A., *Assistant Professor of Accounting* (1963).
William H. Miernyk, Ph.D., *Professor of Economics* (1965).
Joseph Newhouse, M.S., *Associate Professor of Economics and Finance* (1967), 1949.
Evan O. Roberts, Ph.D., *Professor of Economics and Marketing* (1953), 1939.
Richard D. Raymond, Ph.D., *Assistant Professor of Economics* (1965).
Robert J. Saunders, Ph.D., *Assistant Professor of Economics* (1965).
Kenneth L. Shellhammer, A.B., *Assistant Professor of Economics* (1967), 1965.
Charles P. Skaggs, M.S., C.P.A., *Assistant Professor of Accounting* (1964), 1961.
Richard H. Slavin, Ph.D., *Associate Professor of Economics* (1964), 1963.
Anthony H. Stocks, Ph.D., *Associate Professor of Economics* (1965), 1961.
James C. Summers, M.B.A., *Instructor in Management* (1965).
James H. Thompson, Ph.D., *Professor of Economics* (1958), 1951.
Vern H. Vincent, Ph.D., C.P.A., *Professor of Accounting* (1957).
Royce J. Watts, M.S., *Instructor in Economics* (1965).
Fred E. Wright, A.M., *Associate Professor of Finance* (1963), 1951.
Fred A. Zeller, Ph.D., *Associate Professor of Economics* (1965).

The Visiting Committee

W. G. Caperton, Jr., Charleston
Don Kammert, New York City
Julius Stern, Parkersburg
George Stinson, Pittsburgh, Pa.
Robert E. Witschey,* Charleston

*Deceased

STANDING COMMITTEES

Executive: Messrs. Campbell (*Chairman*), Roberts, Stocks, and Wright.
Awards: Messrs. Roberts (*Chairman*), Issack, Newhouse, and Vincent.
Continuing Education: Kirk (*Chairman*), Isaack, Saunders, and Skaggs.
Faculty Welfare: Johnson (*Chairman*) and Bahl.
Graduate: Stocks (*Chairman*), Alvis, Dellenbarger, and Hamelman.
Library: Haas (*Chairman*), Chapman, and Maust.
Placement: Skaggs (*Chairman*), and Goodwin.
Research: Thompson (*Chairman*), L. Fishman, Hamelman, and Raymond.
Scholarship: Roberts (*Chairman*), Leyden, Newhouse, Vincent, and Wright.

HISTORY

The College of Commerce was established by the Board of Governors of West Virginia University on November 10, 1951, and began its initial year of operation in September, 1952. Prior to this, programs of study and courses leading to the bachelor's and master's degrees in business administration and economics had been offered for many years by the Department of Economics and Business Administration of the College of Arts and Sciences. In September, 1952, the Department of Economics and Business Administration became the College of Commerce.

OBJECTIVES

As a part of the University community, the College of Commerce seeks to provide students with a broad understanding and appreciation of our cultural and intellectual heritage. Furthermore, it offers the opportunity for study in depth in economics and business administration to those who plan to enter upon careers in the business world. Closely related to these objectives is service to the people of the state through consultation and research in many phases of the economic and business life of the state and region.

BUREAU OF BUSINESS RESEARCH

An integral part of the College of Commerce, the Bureau of Business Research undertakes research into business and economic problems—particularly those of West Virginia. This research program is carried out by faculty members and others under the general supervision of the Director of the Bureau of Business Research. Publication of a series of monographs, the *West Virginia Business and Economic Studies*, was begun by the Bureau in 1949.

ACCREDITATION

The College of Commerce is accredited not only through the approval of West Virginia University by national and regional accrediting agencies, but also through full membership in the American Association of Collegiate Schools of Business. This association is the only accrediting agency in the field of professional education for business at the collegiate level.

UNDERGRADUATE PROGRAMS

The College of Commerce offers programs leading to the degrees of Bachelor of Science in Economics and Bachelor of Science in Business Administration. In business administration, majors are offered in Accounting, Finance, Industrial Management, and Marketing.

Undergraduate work is taken in two divisions: the lower division or Pre-Commerce, in which freshmen and sophomores are enrolled; and the upper division, in which juniors and seniors are enrolled. Since the Pre-Commerce curriculum is designed to afford students a general educational background and provide a foundation

for the work that follows, Pre-Commerce students are enrolled in the College of Arts and Sciences.

After completion of 58 semester hours of required and acceptable elective courses with a grade average of not less than "C," the student will be admitted to the College of Commerce. Upon admission each incoming student must select a major concentration area from among the following: Accounting, Economics, Finance, Industrial Management, and Marketing. Although narrowly specialized training is avoided, these concentration areas permit upperclassmen to acquire knowledge in depth in one area that is of particular interest to them.

All undergraduate programs are designed to assure a well-rounded education for students and to satisfy the requirements of the University Core Curriculum. Since many students do not follow ultimately the careers for which they prepare while in the University, the College of Commerce requires the completion of a Commerce Core which should better enable them, in terms of versatility and adaptability, to meet the changing courses of their careers than does a highly specialized program. Furthermore, it affords a comprehensive educational foundation upon which specialized programs can be built.

GRADUATE PROGRAMS

The College of Commerce offers programs leading to the degrees of Master of Business Administration, Master of Science in Business Administration, Master of Arts in Economics, and Ph.D., in Economics. Students in these programs register in the Graduate School. Details about these programs may be found in the current Graduate School *Announcements*.

Requirements for Admission

UNDERGRADUATE STUDENTS

Applicants seeking admission to the College of Commerce for the purpose of obtaining a degree must have earned at least 58 semester hours of credit in required and approved elective courses in the Pre-Commerce curriculum at a grade average of not less than "C." No student will be admitted who has not completed Economics 51 and 52, Accounting 51, and passed English 2 with a "C" or better at this institution or passed the English Proficiency Examination.

CREDITS ACCEPTED FROM A JUNIOR COLLEGE

The maximum amount of credit accepted from a junior college accredited by the North Central Association of Colleges and Secondary Schools or other regional accrediting associations will not exceed seventy-two (72) hours. All courses in business and economics taken at a junior college will be classified as lower division (freshman and sophomore) by the Office of Admissions. No credit will be allowed for courses completed in a junior college subsequent to attainment of junior or higher rank by the student at the University.

ADVANCED STANDING EXAMINATION

An advanced standing examination is required for work of college grade for which college credit cannot be established on the basis of an official transcript of record and for courses taken at an accredited junior college for which the student wishes to receive upper-division credit. Applications for these advanced standing examinations should be made to the Director of Admissions of the University not later than two weeks after the applicant's matriculation. Upon payment of the proper fee, the Director of Admissions will issues an examination permit and the applicant should take the examination before the end of the semester. After the examination, the examiner will report to the Director of Admissions the University course, if any, for which the applicant is entitled to credit.

Requirements for Degrees

BACHELOR'S DEGREE

To qualify for either the Bachelor of Science in Business Administration or Bachelor of Science in Economics degrees, the student who enters the University after September 1, 1964, must have:

1. Earned 128 semester hours of credit with a "C" or 2.0 grade-point average on all work attempted at West Virginia University. In addition, all students entering the College of Commerce after September 1, 1965 are required to maintain at least a 2.0 average on work attempted after the date of their admission to the College.
2. Earned 124 semester hours of credit in subjects other than required Physical Education, required Military Science or Air Force Aerospace Studies, English 0, and Mathematics 2. A maximum of 6 hours in Advanced Military Science or Air Force Aerospace Studies will be allowed toward credit for graduation and is counted as a Non-Commerce elective. Students who elect a foreign language must complete at least 6 hours in the same language.
3. Earned at least 60 hours of credit in upper-division courses (those numbered 100 or higher).
4. Earned at least 30 hours of credit while enrolled in this college and in residence.
5. Satisfied the requirements of the University Core Curriculum described on page 48.
6. Satisfied the course requirements of one of the Commerce curricula described below.
7. Demonstrated proficiency in the use of English, if this is his native language, by earning a grade of "C" or higher in English 2 at West Virginia University or by passing an English Proficiency Examination, described on page 49.

UNDERGRADUATE CURRICULA

The student must complete the following courses to qualify for a Bachelor of Science degree in the College of Commerce. These should normally be taken in the sequence described in the section entitled "Recommended Programs of Study."

I. NON-COMMERCE COURSES	B.S. in Bus. Admin.	B.S. in Economics
	Hr.	*Hr.*
English 1 and 2—Composition and Rhetoric	6	6
English 123—Business English	3	
Speech 11—Oral Communications	3	3
Political Science 2—American Federal System	3	3
Psychology 1—Introduction to Psychology	3	3
Sociology—Introduction to Sociology	3	3
Mathematics 3—College Algebra	3	3
Mathematics 8—Finite Mathematics	3	3
Mil. Sci. or Aerospace Studies 1, 2, 3, and 4 (Men)	8	8
Physical Education—Men's General Program	2	2
Physical Education—Women's Program	4	4
Electives—Core Group A	12	12
Electives—Core Group B (other than Economics)	6	6
Electives—Core Group C	9	9
Electives—Non-Commerce	7	13
TOTAL	65-71	68-74
II. UNRESTRICTED ELECTIVES	3	6

III. COMMERCE CORE COURSES	B.S. in Bus. Admin.	B.S. in Economics
	Hr.	*Hr.*
Accounting 51 and 52—Principles	6	6
Economics 51 and 52—Principles	6	6
Economics 125—Statistics	3	3
Economics 130—Money and Banking	3	3
Economics 160—Labor Economics	3	
Business Law 111—Legal Environment	3	
Business Law 112—Commercial Law	3	
Finance 111—Business Finance	3	
Management 111—Manufacturing	3	
Marketing 111—Marketing	3	
TOTAL	36	18

IV. MAJOR REQUIREMENTS

Accounting Majors	*Hr.*
Accounting 111 and 112—Intermediate Accounting	6
Accounting 113—Advanced Accounting	3
Accounting 115—Cost Accounting	3
Accounting 211—Accounting Systems *or* Accounting 217—Auditing Theory	3
Electives—Commerce	9
TOTAL	24

Finance Majors	*Hr.*
Economics 241—Public Finance	3
Finance 112—Financial Management	3
Finance 150—Investments	3
Management 225—Business Policy	3
Electives—Commerce	12
TOTAL	24

Industrial Management Majors	*Hr.*
Accounting 115—Cost Accounting	3
Management 112—Production Planning and Control	3
Management 216—Personnel Management	3
Management 225—Business Policy	3
Electives—Commerce	12
TOTAL	24

Marketing Majors	*Hr.*
Marketing 112—Marketing Management	3
Marketing 120—Advertising	3
Marketing 215—Marketing Research	3
Management 225—Business Policy	3
Electives—Commerce	12
TOTAL	24

Economics Majors	*Hr.*
Economics 211—Micro Economic Analysis	3
Economics 212—Macro Economic Analysis	3
Economics 216—History of Economic Thought	3
Economics 241—Public Finance	3
Electives—Economics	9
Electives—Business Administration	9
Electives—Economics or Business	6
TOTAL	36

SUBSTITUTIONS FOR REQUIRED COURSES

Any substitution of another course for a required course must be approved in writing by the Dean of the College of Commerce.

SECOND BACHELOR'S DEGREE

A student who has received a Bachelor's Degree from an approved college or University may become eligible for a second Bachelor's Degree by earning a minimum of 30 semester hours of credit, which shall include all the courses in the Commerce Core and such other courses as the Dean may prescribe.

College Regulations

ATTENDANCE AT COMMENCEMENT

Candidates for degrees to be conferred at the close of the second semester must be present in person to receive their diplomas unless excused by the Dean. No individual may be exempted from the provisions of this University regulation, except by official action of the Board of Governors of the University.

MAXIMUM AND MINIMUM COURSE LOAD

The maximum course load for students in the College of Commerce is 18 hours and the minimum academic load for full-time students is 14 hours a semester. Students desiring to schedule more than 18 hours or less than 14 hours should submit a petition to the Scholarship Committee which must approve any exceptions. The student, however, that had a 3.0 or better on a full load during the preceding semester may schedule not more than 20 hours without petitioning the Scholarship Committee.

WORK TAKEN AT OTHER INSTITUTIONS

Students who expect to obtain a degree from the College of Commerce and who wish to take work at other institutions must have their programs approved by the Dean of the College of Commerce before registering at another institution of higher learning. Ordinarily required courses must be taken at West Virginia University.

LATE REGISTRATION

Students will not be permitted to enroll in a College of Commerce course after the eighteenth day of the semester or the ninth day of the Summer Session without the Dean's permission, the first day being defined here as the initial day of upper-division registration.

WITHDRAWAL FROM COURSES

Students registered in the College of Commerce will not be permitted to withdraw from courses after the eighteenth day of each semester or the ninth day of the Summer Session, the first day being defined here as the initial day of upper-division registration.

Students will not be permitted to withdraw from a required lower-division course while enrolled in upper-division courses.

ABSENCES

Each instructor shall be responsible for the attendance of students in his classes and shall report an excessive number of absences to the Dean of the College for such action as may be deemed advisable.

University students who find it necessary to be absent from classes by reason of absence from Morgantown while the University is in session must obtain permission in advance from the Dean, and in case of University women, from the Dean of Women also.

If a student's absences in any course exceed 12 per cent of the total number of recitations in the course, he may be barred from taking the final examination.

If a student's absences in any course exceed 25 per cent of the total number of meetings, or he is absent from all the class meetings during 14 calendar days immediately preceding the period set for final examinations, he may be considered to have withdrawn irregularly from the course and be given a grade of "F."

PROBATION AND SUSPENSION

See the statement of the uniform University wide probation and suspension rule contained under "Scholastic Standing and Grade Points" on pages 58-59.

General Information

ADVISERS

Freshman and sophomore students are assigned to Pre-Commerce advisers in the College of Arts and Sciences. Students entering the College of Commerce are assigned to an appropriate adviser in the college according to the major program selected by the student. Every student's program of study must be approved by his adviser.

DEAN'S HONOR LIST

At the end of each semester, the Dean of the College of Commerce will compile and release for publication a list of those students who attained a grade-point average of 3.3 or higher on a total load of 14 or more credit hours during that semester.

STUDENT ORGANIZATIONS

Beta Gamma Sigma, national scholarship society in commerce and business administration, is represented in the College of Commerce by the Alpha of West Virginia Chapter. Eligibility for membership is restricted to the highest 4 per cent of the junior class, the highest 10 per cent of the senior class, and the highest 20 per cent of the graduate students.

Alpha Kappa Psi, professional business fraternity, has as its objectives the encouragement of scholarship, the fostering of close relationships between men in the business world and students in the College of Cimmerce, and the promotion of a varied program of activities which will supplement classroom training for careers in business.

Student societies in specialized fields of commerce include *Beta Alpha Psi,* national professional accounting fraternity; *Omicron Delta Epsilon,* national economics fraternity; the *Society for the Advancement of Management,* affiliated with the national organization bearing the same name; and the *Marketing Club.*

PLACEMENT OF GRADUATES

The placement committee in the College as well as all staff members will aid qualified graduates to find desirable employment. Graduates have access to the University Placement Service, which serves graduating seniors and alumni.

Recommended Programs of Study

PRE-COMMERCE PROGRAM

Pre-Commerce students are expected to complete the Pre-Commerce program study within their first two years of residence at the University. It is particularly important that Economics 51 and 52 be completed during the sophomore year since these courses are prerequisite for all upper-division courses in the College of Commerce.

Students must observe the University Core Curriculum Requirements as to distribution of elective courses. During the four years, the student must complete 12 hours of Group A electives, 15 hours of Group B electives other than Economics but including required Group B courses (Psychol. 1, Sociol. 1, and Pol. Sci. 2), and 12 hours of Group C electives including the required Group C courses (Math. 3 and Math. 8) from the list of approved elective courses.

FRESHMAN YEAR

First Sem.[2]	*Hr.*	*Second Sem.*	*Hr.*
English 1—Composition	3	English 2—Composition	3
Pol. Sci. 2—Amer. Fed. System	3	Math. 3—College Algebra[2]	3
Psychol. 1	3	Sociol. 1	3
Mil. Sci. or A.S. 1—Men[1]	2	Mil. Sci. or A.S. 2—Men[1]	2
Phys. Educ.—Men and Women[1]	1	Phys. Educ.—Men and Women[1]	1
Electives—Core Group C	3-4	Electives—Core Group A	3
Electives—Women	1	Electives—Core Group C	3-4
Total—Men	15-16	Total—Men	18-19
Total—Women	14-15	Total—Women	16-17

SOPHOMORE YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Acctg. 51—Principles	3	Acctg. 52—Principles	3
Econ. 51—Principles	3	Econ. 52—Principles	3
Math. 8—Finite Math.[2]	3	Speech 11—Oral Communications	3
Mil. Sci. or A.S. 3—Men[1]	2	Mil. Sci. or A.S. 4—Men[1]	2
Phys. Educ.—Women[1]	1	Phys. Educ.—Women[1]	1
Electives—Core Group A	3	Electives—Core Group A	3
Electives—Core Group C	3	Electives—Men	4
		Electives—Women	3
Total—Men	17	Total—Men	18
Total—Women	16	Total—Women	16

[1]A minimum of 124 hours of credit must be earned in subjects other than required Physical Education, required Military Science or Air Force Aerospace Studies, English 0, and Math. 2.

[2]The student deficient in Mathematics, as evidenced by the ACT score, must take Mathematics 2, the remedial algebra course, during the first semester in residence in order to prepare for Mathematics 3 and Mathematics 8 required in subsequent semesters.

B.S. IN BUSINESS ADMINISTRATION PROGRAMS

Accounting[1]

The accounting program is designed to prepare students for public accounting and for positions as accountants in business, industry, and government.

JUNIOR YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Acctg. 111—Intermediate Accounting	3	Acctg. 112—Intermediate Acctg.	3
Acctg. 115—Cost Accounting	3	Bus. Law 112—Commercial Law	3
Bus. Law 111—Legal Environment	3	Econ. 125—Statistics	3
English 123—Business English	3	Mgmt. 111—Manufacturing	3
Finance 111—Business Finance	3	Mrkt. 111—Marketing	3
Electives—Non-Commerce	3	Electives—Non-Commerce	3
TOTAL	18	TOTAL	18

SENIOR YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Acctg. 211—Acctg. Systems (or Acctg. 217—Auditing Theory 2nd Sem.)	3	Acctg. 113—Advanced Acctg.	3
		Econ. 160—Labor Economics	3
		Electives—Commerce	3
Econ. 130—Money and Banking	3	Electives—Non-Commerce	3
Electives—Commerce	6	Electives—Unrestricted	3
Electives—Non-Commerce	3		
TOTAL	15	TOTAL	15

Finance[1]

This program is designed to meet the needs of those students who plan to enter government service or to become associated with the financial or insurance departments of banks, commercial firms, and industrial organizations.

JUNIOR YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bus. Law 111—Legal Environment	3	Bus. Law 112—Commercial Law	3
Econ. 130—Money and Banking	3	Econ. 125—Statistics	3
English 123—Business English	3	Finance 112—Financial Mgmt.	3
Finance 111—Business Finance	3	Mgmt. 111—Manufacturing	3
Electives—Commerce	3	Mrkt. 111—Marketing	3
Electives—Non-Commerce	3	Electives—Non-Commerce	3
TOTAL	18	TOTAL	18

SENIOR YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Econ. 241—Public Finance	3	Econ. 160—Labor Economics	3
Finance 150—Investments	3	Mgmt. 225—Business Policy	3
Electives—Commerce	6	Electives—Commerce	3
Electives—Non-Commerce	3	Electives—Non-Commerce	3
		Electives—Unrestricted	3
TOTAL	15	TOTAL	15

[1]The student must earn at least 60 hours in upper-division courses (numbered 100 or higher). The apparent excess requirement of 6 hours (total of 66 hours indicated under each program) provides for the completion of the University Core program which may be at the lower-division (courses numbered 1 to 99) or upper-division levels. However, the student must take a minimum of 9 hours of upper-division non-commerce electives in the various Business programs and 18 hours in the Economics program.

Industrial Management*

This program is designed to prepare students for positions in industrial management, especially those in production and industrial relations. Although it does not provide technical training, it does provide a foundation upon which specialized training can be developed.

JUNIOR YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bus. Law 111—Legal Environment	3	Bus. Law 112—Commercial Law	3
Econ. 125—Statistics	3	Acctg. 115—Cost Accounting	3
Mgmt. 111—Manufacturing	3	English 123—Business English	3
Mrkt. 111—Marketing	3	Finance 111—Business Finance	3
Electives—Commerce	3	Mgmt. 112—Prodn. Plan. & Control	3
Electives—Non-Commerce	3	Electives—Non-Commerce	3
TOTAL	18	TOTAL	18

SENIOR YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Econ. 160—Labor Economics	3	Econ. 130—Money and Banking	3
Mgmt. 216—Personnel Mgmt.	3	Mgmt. 225—Business Policy	3
Electives—Commerce	6	Electives—Commerce	3
Electives—Non-Commerce	6	Electives—Non-Commerce	3
		Electives—Unrestricted	3
TOTAL	15	TOTAL	15

Marketing*

The marketing program is designed to prepare students for careers in the field of distribution, at the manufacturing, wholesaling, or retailing level.

JUNIOR YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Bus. Law 111—Legal Environment	3	Bus. Law 112—Commercial Law	3
Econ. 125—Statistics	3	Econ. 130—Money and Banking	3
Mgmt. 111—Manufacturing	3	English 123—Business English	3
Mrkt. 111—Marketing	3	Finance 111—Business Finance	3
Electives—Commerce	3	Mrkt. 112—Marketing Mgmt.	3
Electives—Non-Commerce	3	Electives—Non-Commerce	3
TOTAL	18	TOTAL	18

SENIOR YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Econ. 160—Labor Economics	3	Mrkt. 215—Marketing Research	3
Mrkt. 120—Advertising	3	Mgmt. 225—Business Policy	3
Electives—Commerce	6	Electives—Commerce	3
Electives—Non-Commerce	3	Electives—Non-Commerce	3
		Electives—Unrestricted	3
TOTAL	15	TOTAL	15

*See footnote 1 on page 211.

B.S. IN ECONOMICS PROGRAM*

The economics program is designed for those who wish to emphasize economics in their education for a business career, for those who wish to undertake graduate work for an advanced degree in this field, and for those who wish to enter government service.

JUNIOR YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Econ. 130—Money and Banking	3	Econ. 212—Macro Econ. Analysis	3
Econ. 125—Statistics	3	Electives—Business	3
Econ. 211—Micro Econ. Analysis	3	Electives—Economics	6
Electives—Business	3	Electives—Non-Commerce	6
Electives—Non-Commerce	6		
TOTAL	18	TOTAL	18

SENIOR YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Econ. 241—Public Finance	3	Econ. 222—Hist. of Econ. Thought	3
Electives—Business	3	Electives—Business or Economics	3
Electives—Economics	3	Electives—Non-Commerce	3
Electives—Business or Economics	3	Electives—Unrestricted	6
Electives—Non-Commerce	3		
TOTAL	15	TOTAL	15

*See footnote 1 on page 211.

Courses of Instruction

ACCOUNTING**

51. **Principles of Accounting.** I, II. 3 hr. PR: Sophomore standing. The fundamentals of accounting for business enterprises: the accounting cycle, journals and ledgers, working papers, statements.

52. **Principles of Accounting.** I, II. 3 hr. PR: Accounting 51. Further study of the accounting process with emphasis on assets, liabilities, and net worth; manufacturing accounts; analysis of financial statements.

111. **Intermediate Accounting.** I. 3 hr. PR: Accounting 52. Analysis of accounting theory and practice as applied to business firms; assets valuation, liabilities, income determination.

112. **Intermediate Accounting.** II. 3 hr. PR: Accounting 111. A continuation of Accounting 111.

113. **Advanced Accounting.** II. 3 hr. PR: Accounting 112. Accounting for partnerships, consolidations, installment sales, consignments, receiverships, reorganizations, branches, foreign exchange, and estates and trusts.

115. **Cost Accounting.** I, II. 3 hr. PR: Accounting 52. Fundamentals of cost determination with emphasis on the significance of cost data and their interpretation; process, job-order, and standard costs.

211. **Accounting Systems.** I. 3 hr. PR: Accounting 112. The adaption of accounting procedures to the demands of the firm, with emphasis on theoretical factors important to efficiency and internal control; system surveys and reports, the design of forms, office machine applications.

**Economics 52 is a prerequisite for all upper-division courses.

213. **Income Tax Accounting.** I. 3 hr. PR: Accounting 112 or consent. Tax theory and practice as developed from the regulations of the Internal Revenue Service; problems in preparation of tax returns for individuals, partnerships, and corporations.

214. **Income Tax Accounting.** II. 3 hr. PR: Accounting 213. A continuation of Accounting 213.

216. **Advanced Cost Accounting.** II. 3 hr. PR: Accounting 115. Advanced work in the application of cost theory and procedures to cases and problems which emphasize the managerial use of cost information.

217. **Auditing Theory.** I or II. 3 hr. PR: Accounting 112. Auditing fundamentals; objectives, standards and procedures; introduction to working-paper techniques; procedure statements of the American Institute of CPA's.

218. **Auditing Practice.** I or II. 3 hr. PR: Accounting 217. Application of auditing theory and procedures, with emphasis on decisions which invoke judgment and are important in independent audits; audit working papers and reports; case studies.

224. **Advanced Accounting Problems.** I or II. 3 hr. PR: Minimum of 18 hours in accounting with an average grade of "B" or higher. Analysis and solution of representative CPA problems.

230. **Advanced Accounting Theory.** I or II. 3 hr. PR: Accounting 112, 115, and consent. A critical analysis of accounting concepts and standards with emphasis on their origin, development, and significance.

BUSINESS LAW**

111. **Legal Environment of Business.** I, II. 3 hr. The nature of law and the judicial system. The relationship of law, ethics, and cultural values to business enterprise. Substantive law of contracts, sales, and credit transactions and the social and economic consequences of court decisions.

112. **Commercial Law.** I, II. 3 hr. PR: Business Law 111. Substantive law of agency, partnerships, corporations, negotiable instruments, and property and their social and economic functions.

ECONOMICS**

51. **Principles of Economics.** I, II. 3 hr. PR: Sophomore standing. Principles or resource allocation, income, output and price determination under different competitive conditions; money, banking, and monetary policy; national income, employment, and fiscal policy; taxation and government spending; international economics, underdeveloped areas, and comparative economic systems.

52. **Principles of Economics.** I, II. 3 hr. PR: Economics 51. A continuation of Economics 51.

125. **Statistics.** I, II. 3 hr. PR: Math. 3. Basic statistical methods employed in collection, presentation, analysis, and interpretation of business and economic data such as analysis of frequency distributions, time series, inference, index numbers, and correlation.

130. **Money and Banking.** I, II. 3 hr. Our system of monetary and banking arrangements, viewed in relation to functioning of the economic system as a whole.

160. **Labor Economics.** I, II. 3 hr. An introduction to labor economics and labor relations in industry, including the interaction of economic forces, union policies, personnel practices, and labor law.

**Economics 52 is a prerequisite for all upper-division courses.

205. **Current Economic Problems.** S. 3 hr. PR: Economics 51 and 52 or consent. For students in Education only. A course designed to acquaint public school teachers with reliable source material in economics and to instruct them in studying current economic problems.

210. **Comparative Economic Systems.** I or II. 3 hr. Structure and processes of existing economic systems throughout the world including review of basic principles of free enterprise, socialistic, communistic, and fascists societies. Comprehensive analysis based on current and recent experiments in these economies.

211. **Micro Economic Analysis.** I. 3 hr. A study of price and output determination and resource allocation in the firm under various competitive conditions.

212. **Macro Economic Analysis.** II. 3 hr. An analysis of the forces which determine the level of income, employment, and output. Particular attention is given to consumer behavior, investment determination, and government fiscal policy.

213. **Economic Development.** I or II. A comprehensive study of the problems, changes, and principal policy issues faced by non-industrialized countries in the process of economic development.

216. **History of Economic Thought.** II. 3 hr. Economic ideas in perspective of historic development.

220. **Introduction to Quantitative Analysis.** I or II. 3 hr. PR: Economics 125. Study of the principal mathematical techniques employed in economic analysis; an introduction to econometrics.

226. **Advanced Statistics.** II. 3 hr. PR: Economics 125 or equiv. An advanced approach to statistical analysis with emphasis on probability, inference, and multi-varied statistical techniques.

230. **Public Utilities.** II. 3 hr. Development of regulation; economics of valuation and rate making.

235. **Economic Growth and Fluctuations.** I or II. 3 hr. PR: Economics 125 or consent. Industrial fluctuations; causes and possible remedies.

241. **Public Finance.** I. 3 hr. Governmental fiscal organizations and policy; taxes and tax systems with particular emphasis upon the Federal Government and the State of West Virginia.

245. **Government and Business.** I or II. 3 hr. Government in its role of adviser and umpire; analysis of governmental policies and practices affecting business.

246. **Transportation.** I. 3 hr. Development of an inland transportation system and relations and policies of transport agencies.

250. **International Economics.** I or II. 3 hr. Development of trade among nations; theories of trade, policies, physical factors, trends, and barriers in international economics.

255. **Regional Economics.** I or II. 3 hr. An analysis of the factors that promote or deter the economic growth of a region, with emphasis on such matters as population shifts, economic base studies, industrial location analyses, input-output techniques, regional income estimation, local multiplier and cycle concepts, and the role of government in regional growth.

261. **Trade Unionism.** I or II. 3 hr. PR: Economics 160 or consent. An analysis of the structure, government, attitudes, and policies of organized labor; the implications of union policy.

262. **Collective Bargaining.** I or II. 3 hr. PR: Economics 160 or consent. Theory and practice of collective bargaining; including contract issues, types of relationships, and the role of government policy.

263. **Economics of Wages.** I or II. 3 hr. PR: Economics 160 or consent. The determination of wage levels and structure; the functioning and organization of labor markets.

FINANCE**

111. **Business Finance.** I, II. 3 hr. PR: Accounting 51 and 52 or consent. A study of the activities of the finance manager in the planning, acquisition, and administration of funds used in a business enterprise.

112. **Financial Management.** II. 3 hr. PR: Finance 111. Application of fundamentals and theory to the analysis of cases in business finance.

115. **General Insurance.** I, II. 3 hr. Theory of risk and its application to insurance; principles underlying all forms of insurance—life, property, casualty, fire, and surety.

120. **Life Insurance.** I. 3 hr. PR: Finance 115. Principles of life-insurance protection; legal regulation of insurance companies.

150. **Investments.** I. 3 hr. PR: Finance 111 or consent. Investment analysis and management for the individual and the financial institution.

161. **Real Estate.** II. 3 hr. Principles and practices of real estate business.

216. **Risk Management.** II. 3 hr. PR: Finance 115 or consent. A study of the transferable risks with which the enterpreneur must deal. Emphasis is on the process by which decisions are made for the handling of these risks, including an examination of the contributions and limitations of the insurance system.

MANAGEMENT**

105. **Management Process.** I, II. 3 hr. A study of management as a process comprised of the functions of planning, organizing, directing, and controlling business activities. Emphasis is placed on management as a rational, orderly, intellectual process for making resources productive.

111. **Manufacturing.** I, II. 3 hr. A survey of the important activities of the manufacturing function including organization, economic limitations affecting manufacturing, and control systems and analytical tools used by manufacturing managers.

112. **Production Planning and Control.** II. 3 hr. PR: Management 111. The management of manufacturing and production activities with emphasis on their coordination and control to achieve production goals.

213. **Problems in Business Administration.** I or II. 1-3 hr.

216. **Personnel Management.** I, II. 3 hr. Principles and practices in the direction, coordination, and remuneration of manpower.

225. **Business Policy.** I, II. 3 hr. PR: Completion of the Commerce Core courses. Integrated study of policies, organization, facilities, and control techniques of business enterprises.

MARKETING**

111. **Marketing.** I, II. 3 hr. Analysis of those activities through which business firms direct the flow of their goods and services to consumers and users.

112. **Marketing Management.** II. 3 hr. PR: Marketing 111. The application of fundamentals and theory to the analysis of marketing cases and the development of marketing strategies.

**Economics 52 is a prerequisite for all upper-division courses.

115. **Retailing.** II. 3 hr. PR: Marketing 111. Management of retailing establishments, with emphasis on organization, merchandising, buying, sales promotion, customer services, and control of operations.

120. **Advertising.** I, II. 3 hr. PR: Marketing 111 and 112. Introduction to principles and practices of advertising, including preparation of a complete advertising campaign.

210. **Industrial Purchasing.** I. 3 hr. PR: Marketing 111. A survey of corporate procurement problems facing modern purchasing executives.

215. **Marketing Research.** II. 3 hr. PR: Marketing 111. The utilization of present-day marketing research techniques in the solution of practical marketing problems, with particular reference to West Virginia.

The Creative Arts Center

ADMINISTRATIVE OFFICERS

Richard E. Duncan, Ph.D., *Dean and Director of Creative Arts Center; Professor of Music* (1964), 1958.
Clifford W. Brown, M.F.A., *Assistant Dean of Creative Arts Center; Professor of Music* (1964), 1942.

FACULTY

Division of Music

James W. Benner, M.A., *Assistant Professor of Music. Piano* (1966).
Francis T. Borkowski, M.M., *Assistant Professor of Music. Clarinet; Director of Bands* (1962), 1961.
Kay K. Borkowski, B.M., *Instructor* (part-time) *in Music. Flute* (1963).
Thomas S. Brown, M.A., *Assistant Professor of Music* (1967).
Thomas S. Canning, M.M., *Professor of Music. Composition, Theory* (1967), 1963.
Walter L. Coplin, M.M., *Assistant Professor of Music. String Bass, Instrument Classes* (1952), 1947.
Jon Crain, *Professor of Music. Voice* (1966)
Rose Crain, *Assistant Professor of Music. Voice* (1967).
Arno P. Drucker, M.M., *Assistant Professor of Music and Chairman of the Applied Music Department. Piano* (1962), 1959. (On leave of absence 1967-68).
Ruth L. Drucker, M.M., *Assistant Professor of Music. Voice* (1967), 1961. (On leave of absence (1967-68).
Jon E. Engberg, M.M., *Assistant Professor of Music. Violoncello, Theory. Acting Chairman of Applied Music Department* (1967), 1959.
Clyde N. English, D.S.M., *Associate Professor of Music. Organ, Church Music* (1953), 1945.
Philip J. Faini, M.M., *Assistant Professor of Music. Percussion, Theory* (1966), 1961.
Mary Jane Glasscock, M.M., *Instructor in Education. Music Education* (1947), 1943.
Herman Godes, M.M., *Professor of Music. Piano* (1964), 1960.
Joseph A. Golz, M.A., *Associate Professor of Music; Director of Opera Department and Choral Organizations* (1959).
Leo Horacek, Ph.D., *Professor of Music; Chairman of Department of Music Education. Music Education* (1967), 1960.
Barton Hudson, Ph.D., *Assistant Professor of Music. Musicology* (1964). (On leave of absence 1967-68).
Bonnie G. Joehnk, M.M., *Instructor in Music. Piano* (1962).
Gerald Lefkoff, Ph.D., *Associate Professor of Music. Theory, Viola* (1966), 1961.
Stephen Lickman, M.M., *Instructor in Music. Oboe, Theory* (1966).
Frank E. Lorince, Jr., Ph.D., *Associate Professor of Music; Chairman of Department of Theory and Composition. Theory* (1965), 1950.
Margaret S. Lorince, M.M., *Assistant Professor of Music; Chairman of Preparatory Department. Piano* (1967), 1963.
Bernard R. McGregor, M.F.A., *Assistant Professor of Music. Voice; Lecturer in Music* (1950), 1935.
James E. Miltenberger, D.M.A., *Assistant Professor of Music. Piano* (1966), 1962.
Jane R. Pestun, M.M., *Instructor in Music. Piano* (1945), 1942.
Donald C. Portnoy, M.A., *Assistant Professor of Music. Violin; Director of Symphony Orchestra and Director of Summer Music Camp* (1962), 1959.
David M. Richey, M.M., *Assistant Professor of Music. Brass Instruments* (1967).
George E. Schafer, Ph.D., *Professor of Music; Chairman of Graduate Studies; Lecturer in Music* (1962), 1954.
Stephanie Shehatovich, *Instructor in Music—University Extension. Piano* (1960).
Roger C. Sherman, B.M., *Assistant Professor of Music. Trumpet* (1967), 1964.
Edward Sprague, M.S., *Associate Professor of Music—University Extension* (1964), 1962.

Forrest W. Standley, *Instructor in Music. French Horn* (1963).
Mary E. Stringham, M.A., *Assistant Professor of Music Education* (1967).
R. Scott Stringham, Ph.D., *Assistant Professor of Music. Lecturer in Music. Choir* (1964).
June D. Swartwout, M.M., *Instructor* (part-time) *in Music. Voice* (1966).
Budd A. Udell, M.M.E., *Assistant Professor of Music. Director of Marching Band, Concert Band, Theory* (1966), 1963.
William O. Winstead, M.M., *Instructor in Music. Bassoon* (1965).
Frances Yeend, *Professor of Music. Voice* (1966).

Division of Art

George Nocito, M.F.A., *Professor and Chairman of Art* (1967).
Jo Mather Aull, Dipl., *Instructor* (part-time) *in Art* (1945).
John D. Clarkson, M.A., *Professor of Art; Curator and Director of Acquisitions* (1967), 1948.
Howard F. Collins, B.A., *Associate Professor of Art* (1965).
Barbara A. Drainer, Ed.D., *Associate Professor of Art* (1964), 1952.
Ben F. Freedman, M.A., *Assistant Professor of Art* (1962), 1957.
Glenn B. Hamm, M.F.A., *Instructor in Art* (1965).
Joe F. Moss, M.A., *Assistant Professor of Art* (1964), 1960.

Division of Drama

Sam Boyd, Jr., M.F.A., *Professor and Chairman of Drama* (1964), 1943.
Robert B. Burrows, Ph.D., *Professor of Drama; Director of Design* (1963), 1948.
K. Clark Crandell, B.S., *Instructor in Drama* (1966).
Joe E. Ford, M.A., *Associate Professor of Drama, Director of Technical Theatre; Director of West Virginia High School Drama Festival* (1966), 1953.
Lenette May Hardin, M.A., *Assistant Professor of Drama. Oral Interpretation* (1967), 1953.
James A. Hawkins, M.A., *Assistant Professor of Drama* (1967), 1965.
Patrick B. Murphy, M.A., *Instructor in Drama* (1967).
Charles D. Neel, Ph.D., *Assistant Professor of Drama; Studio Theatre Supervisor* (1966), 1960.

THE CREATIVE ARTS

Music, art, and drama are testaments to man's desire to express himself and his society and to seek personal growth and creative satisfaction.

The goal of the Creative Arts Center is truly professional education of the highest order under the guidance of outstanding artists, performers, and inspired educators. This education is both for the performing and creative student as well as the student preparing for a teaching career in elementary, secondary, or higher educational institutions. Construction on the new multi-million dollar Creative Arts Center building was begun during the summer of 1966. This new facility, to be completed in 1968, will provide one of the finest structures and the most modern equipment available for music, art, and drama.

AREAS OF SPECIALIZATION

Music

1. *Applied Music* is designed for the student wishing to concentrate on performing or teaching a particular instrument.

2. *Music Education* prepares the student to teach vocal or instrumental music in the elementary and secondary schools.

3. *Theory and Composition* prepares the composer and the student wishing to teach theory and composition.

Art

1. *Studio Art* is designed for technical training and the history of art.
2. *Art Education* is designed to prepare the student to teach art in the elementary and secondary schools.

Drama

1. *Acting-Directing* prepares the student for a career in acting (stage, television, motion pictures) or in directing plays for the commercial and educational theater.
2. *Scene Design and Technical Theater* trains the student in the principles of designing scenery, lighting, and costumes. Ample opportunity is provided for gaining practical experience in technical theatre production.
3. *Acting-Voice* (singing) is a specialized program in Acting-Singing with strong preparation in both Drama and Music for the student interested in lyric and music theatre.

PRE-UNIVERSITY PREPARATION

Music

The student should become as proficient as possible in his major performance area. He should also try to obtain rudimentary skills in piano and theory. High school courses in History or Appreciation of Music, or outside readings in this area, will be of great value to the student.

Art

The student should take all the courses in art available in his community. He should also visit as many art gallerys and art displays as possible. High school courses in history or appreciation of art, or outside readings in this area, will be of great value to the student.

Drama

The student should participate in as many productions as possible, both as an actor and as a member of the technical staff. He should attend as many live performances as are available to him. Through outside readings, he should acquaint himself with outstanding plays, production techniques, and history of the theater.

The Division of Music

OBJECTIVE

The Division of Music offers truly professional education of the highest order by outstanding performers and inspired educators for the performing and creative student and for the student preparing for a teaching career in elementary, secondary, or higher educational institutions.

PURPOSES

The Division of Music:

1. Offers professional preparation in the fields of instrumental and vocal performance, musical composition, church music, and lyric theatre.
2. Provides the necessary musical skills for the future music educators of the country.
3. Offers opportunities for students in all departments of the University to participate in musical activities and become conscious of the general cultural value of music.

4. Provides professional instruction for the talented young musicians of pre-university age.

5. Provides the facilities and staff to stimulate scholarly research.

6. Stimulates continuing education in music throughout the State in cooperation with the University Extension Division.

7. Serves the University, State, and area by student and faculty presentations of lectures, workshops and clinics, concerts, recitals, and opera productions.

General Information and Degree Requirements

The Division of Music is a member of the National Association of Schools of Music. The requirements for entrance and for graduation as set forth on page 222 are in accordance with the published regulations of that organization. The Music Education Program offered in the Division of Music is fully accredited by the National Council for Accreditation of Teacher Education.

The Division of Music is housed in a modern air-conditioned building. Constructed at a cost of over a million dollars, the building is completely modern in every respect, with special attention having been given to the acoustical problems.

Included among its facilities are 26 teaching studios, 30 practice rooms, band and orchestral rehearsal room, classrooms, library, listening rooms, recital hall, dressing rooms, projection and recording room, and administrative offices.

The faculty consists of 39 artist-teachers and 19 graduate assistants. Each member was carefully selected because his musical background combined inspired teaching with outstanding experience as a professional performer.

The performing groups maintained by the Division of Music are a symphony orchestra, three bands, three choruses, opera department, the American Arts Trio, Percussion Ensemble, Abbey Brass Guild, Faculty Woodwind Quintet, Baroque Ensemble, Collegium Musicum, and numerous student chamber music ensembles.

MUSICAL ORGANIZATIONS

After completing two years in the band or orchestra, especially qualified members of these organizations may continue service in them upon invitation and receive allowances in the form of remission of fees amounting to $30.00 per semester.

UNIVERSITY SYMPHONY ORCHESTRA

The *University Symphony Orchestra* is open to all students, faculty members, and citizens of the community who are proficient in the playing of an orchestral instrument. The repertoire is that of the standard symphony orchestra, with special emphasis on contemporary American music.

The functions of the orchestra are to provide the University and community an opportunity to hear symphonic music, to enable the student to gain orchestral experience, and to serve as a laboratory for student composers, orchestrators, and conductors.

Rehearsals are held each Wednesday evening at 7:30 o'clock in the Music Building. May be taken with or without 1 hour credit as Music 103.

UNIVERSITY CHORAL ORGANIZATIONS

The *University Choir* is open to all students in the University. Choir members are selected by audition. The repertoire includes intimate selections of Chamber Music proportion. Three rehearsals per week. May be taken with or without 1 hour credit as Music 105, Sec. 01.

The *University Singers* is an ensemble of 60 vocalists selected by audition. The group sings the standard choral repertoire and makes several off-campus appearances during the year. Three rehearsals per week. May be taken with or without 1 hour credit as Music 105, Sec. 02.

The *Collegium Musicum* is devoted to the performance of music for small vocal or instrumental ensembles, primarily early music. Three rehearsals per week. May be taken for 1 or 2 hours credit.

The *University Choral Union* is open to all University students who can satisfactorily sing a part. This organization offers opportunity to participate in the performance of major choral works. May be taken with or without 1 hour credit as Music 102.

UNIVERSITY BANDS

The University Bands are composed of three units: the Mountaineer Marching Band, the Concert Band, and the Wind Symphony. Membership is open to men and women in all classes of the various schools, divisions, and colleges in the University.

The *Mountaineer Marching Band* is traditionally a men's organization and is active during the football season. The *Concert Band* is organized at the conclusion of football season and membership includes both men and women. The *Wind Symphony* for both men and women is active throughout the year. May be taken with or without 1 hour credit as Music 100.

STUDENT ORGANIZATIONS

The Division of Music sponsors Epsilon Nu chapter of *Mu Phi Epsilon,* Epsilon Sigma chapter of *Phi Mu Alpha,* a student chapter of the *Music Educators National Conference,* and Omicron Chapter of *Kappa Kappa Psi.*

DIVISION OF MUSIC COMMITTEES

Scholarship: Assistant Professor McGregor, *Chairman;* Professor Schafer; Associate Professors English and F. Lorince; Assistant Professors Coplin and Engberg.

Curriculum: Professor Horacek, *Chairman;* Associate Professors Lefkoff and F. Lorince; Assistant Professors F. Borkowski, Engberg, McGregor, and S. Stringham.

Committee on Awards, Grants, and Scholarships: Assistant Professor Engberg, *Chairman;* Associate Professors Golz and F. Lorince; Assistant Professors F. Borkowski, Faini, Miltenberger, Sherman, and Portnoy.

Graduate Studies: Professor Schafer, *Chairman;* Professor Horacek; Associate Professors Lefkoff and F. Lorince; Assistant Professors Hudson, Miltenberger, and S. Stringham.

THE BACHELOR OF MUSIC DEGREE

The Bachelor of Music Degree is conferred upon any student who complies with the general regulations of the University concerning degrees, satisfies all entrance and departmental requirements,[1] and completes one of the following curricula in music with an average of two grade-points per semester hour:[2]

A. Piano, pipe-organ, band or orchestral instruments.
B. Theory and Composition.
C. Music Education.

Before graduation, all candidates for the degree of Bachelor of Music majoring in Applied Music must have three credits in public performances. All candidates for the degree of Bachelor of Music majoring in Music Education and Theory and Composition must have two credits in public performances. These credits will be granted on the following basis: one credit for each solo performance; one-half credit for each ensemble performance or each accompaniment on piano or organ of major length and difficulty. All but one of the required credits must be achieved by solo performances.

Transfer students must establish transfer credit from other institutions during the first semester in which they are enrolled in the Division of Music.

[1]See Undergraduate Applied Music Requirements.

[2]Not more than 10 hours in Orchestra, Bands, and Choruses will be counted toward requirements for graduation. Grade points in excess of 2 hours of credit in choral groups will not be counted towards requirements for graduation of students in Music Education with an instrumental emphasis. Grade points in excess of 2 hours of credit in Orchestra and Bands will not be counted towards requirements for graduation of students in Music Education with choral emphasis. For curricula other than Music Education, not more than 8 hours of Orchestra, Bands, and Choruses will be counted toward requirements for graduation.

As a part of the requirements for graduation, each full-time undergraduate music major must maintain a satisfactory record of attendance at recitals and concerts presented at West Virgina University during each semester of residence. Music majors participate in at least one Music organization as indicated in the curriculum. Scholarship recipients, however, are expected to render service as needed, such as participating in a particular organization, or ensemble, or to accompany, as the Dean may designate.

The student is responsible for correctly fulfilling all requirements. Each student should review his course requirements both before and after every registration period so that errors or omissions will be detected immediately.

ACCELERATED MUSIC EDUCATION CURRICULUM

Students wishing to complete the Music Education curriculum in less than four years may, with the approval of the adviser and the Chairman of Music Education, accelerate their program by attending summer sessions. All requirements of the four-year curriculum must be satisfied.

COMBINED APPLIED–MUSIC EDUCATION CURRICULUM

An optional program can be arranged for students who desire to meet the requirements of majors in both Applied Music and Music Education. Admission to this program is by written consent of the Chairman of Applied Music and the Chairman of Music Education after the student has completed two semesters. This curriculum satisfies the course requirements of the Professional Certificate, Grades 1-12.

The numerous possible combinations of Applied Music with Music Education cannot be listed separately in this bulletin. When the student becomes a candidate for this degree, his adviser designates the specific courses which must be taken to satisfy the requirements for both Applied Music and Music Education. By attending summer sessions, it may be possible to complete the combined curriculum in four years.

TEACHER CERTIFICATION

Students successfully completing the Music Education curriculum will have satisfied course requirements for the Professional Certificate, Grades 1-12. This certificate qualifies one to teach music on both elementary and secondary levels.

Music majors wishing to qualify for a second teaching field other than music at secondary level will satisfy the requirements for the Professional Certificate, Grades 7-12, by completing the requirements of the second teaching field and the following courses in Education: 100, 105, 106, 120, 124, 169, and an approved 2-hour elective in Secondary Education. (See College of Human Resources and Education for requirements in teaching fields.)

Students who choose Music as the first teaching field, whether enrolled in the Division of Music or in the College of Human Resources and Education, must complete level 7 in the applied major.

APPLIED CURRICULUM—PIANO

Freshman Year	*First Sem.*	*Second Sem.*	*Course Description*
M. 150, Piano	4	4	Piano 7
M. 1, 2	4	4	First-year theory
M. 102 or M. 105	1	1	Choral organization
English 1, 2	3	3	Composition and rhetoric
Biol. or Phys. Sci. 1, 2	4	4	Gen. biol.; intro. gen. course[1]
Phys. Ed.	1	1	
Mil. Sci. or A.S. 1, 2 (M)	2	2	
	Women 34 hr.		
	Men 38 hr.		
Sophomore Year			
M. 150, Piano	4	4	Piano 8
M. 3, 4	2	2	Second-year theory
M. 5, 6	2	2	Theory discussion
M. 140, 141	3	3	History of music
M. 102 or M. 105	1	1	Choral organization
M. 155	1	1	Chamber music
Elective	3	3	
Phys. Ed. (W)	1	1	
Mil. Sci. or A.S. 3, 4 (M)	2	2	
	Women 34 hr.		
	Men 36 hr.		
Junior Year			
M. 150, Piano	4	4	Piano 9
M. 252; 280, 281, 282, or 283	3	3	Form; Survey courses
M. 102 or M. 105	1	1	Choral organization
M. 155	1	1	Chamber music
M. 218, 219	1	1	Methods and pedagogy
M. 253, 254	2	2	Counterpoint
Elective	2	2	Music
Art 30; Academic Elective	3	3	Art apprec.;[2] Elective
	Women 34 hr.		
	Men 34 hr.		
Senior Year			
M. 150, Piano	4	4	Piano 10
M. 155	1	1	Chamber music
M. 220, 221	1	1	Repertoire
M. 299	-	2	Recital
M. 102 or M. 105	1	1	Choral organization
Elective	4	4	Music
Soc. Sci. 1, 2	3	3	Intro. gen. course[3]
	Women 30 hr.		
	Men 30 hr.		
	Total 132 hr. (Women)		
	138 hr. (Men)		

[1]Or Core Group C elective.*
[2]Or Core Group A elective.
[3]Or Core Group B elective.*
*A total of 16 hr. of Core group B and C are required with no less than 6 hr. in either area.

APPLIED CURRICULUM—ORGAN

Freshman Year	*First Sem.*	*Second Sem.*	*Course Description*
M. 150, Organ	4	4	Organ 7
M. 150, Piano	2	2	Piano 5
M. 1, 2	4	4	First-year theory
M. 102 or M. 105	1	1	Choral organization
English 1, 2	3	3	Composition and rhetoric
Biol. or Phys. Sci. 1, 2	4	4	Gen. biol.; Intro. gen. course[1]
Phys. Ed.	1	1	
Mil. Sci. or A.S. 1, 2 (M)	2	2	
	Women 38 hr.		
	Men 42 hr.		
Sophomore Year			
M. 150, Organ	4	4	Organ 8
M. 150, Piano	2	2	Piano 6
M. 3, 4	2	2	Second-year theory
M. 5, 6	2	2	Theory and discussion
M. 140, 141	3	3	History of music
M. 102 or M. 105	1	1	Choral organization
Elective	3	3	
Phys. Ed. (W)	1	1	
Mil. Sci. or A.S. 3, 4 (M)	2	2	
	Women 36 hr.		
	Men 38 hr.		
Junior Year			
M. 150, Organ	4	4	Organ 9
M. 183; 280, 281, 282 or 283	2	3	Conducting; Survey courses
M. 252	3	-	Form
M. 253, 254	2	2	Counterpoint
M. 218, 219	1	1	Methods and pedagogy
M. 102 or M. 105	1	1	Choral organization
Elective	2	2	Music
Art 30; Academic Elective	3	3	Art apprec.;[2] Elective
	Women 34 hr.		
	Men 34 hr.		
Senior Year			
M. 150, Organ	4	4	Organ 10
M. 102 or M. 105	1	1	Choral organization
M. 220, 221	1	1	Repertoire
M. 299	-	2	Recital
Elective	4	4	Music
Soc. Sci. 1, 2	3	3	Intro. gen. course[3]
	Women 28 hr.		
	Men 28 hr.		
	Total 136 hr. (Women)		
	142 hr. (Men)		

[1]Or Core Group C elective.*
[2]Or Core Group A elective.
[3]Or Core Group B elective.*
*A total of 16 hr. of Core group B and C are required with no less than 6 hr. in either area.

APPLIED CURRICULUM

Flute, Oboe, Clarinet, Saxophone, Bassoon, Horn, Trumpet, Trombone, Euphonium, Tuba, Percussion, Violin, Viola, 'Cello, and Double Bass

Freshman Year	*First Sem.*	*Second Sem.*	*Course Description*
M. 150, Applied Music	4	4	Instrument 7
M. 1, 2	4	4	First-year theory
M. 150, Piano	2	2	Piano 2
M. 100 or M. 103	1	1	Band, Orchestra
English 1, 2	3	3	Composition and rhetoric
Biol. or Phys. Sci. 1, 2	4	4	Gen. biol.; Intro. gen. course[1]
Phys. Ed.	1	1	
Mil. Sci. or A.S. 1, 2 (M)	2	2	
	Women 38 hr.		
	Men 42 hr.		
Sophomore Year			
M. 150, Applied Music	4	4	Instrument 8
M. 150, Piano	2	2	Piano 3
M. 3, 4	2	2	Second-year theory
M. 5, 6	2	2	Theory discussion
M. 140, 141	3	3	History of music
M. 100 or M. 103	1	1	Band, Orchestra
Elective	3	3	
Phys. Ed. (W)	1	1	
Mil. Sci. or A.S. 3, 4 (M)	2	2	
	Women 36 hr.		
	Men 38 hr.		
Junior Year			
M. 150, Applied Music	4	4	Instrument 9
M. 117, 118	2	2	Instn.; Orch. & Band Arr.
M. 218, 219	1	1	Methods and pedagogy
M. 155	1	1	Chamber music
M. 100 or M. 103	1	1	Band, Orchestra
M. 253, 254	2	2	Counterpoint
M. 252	3	-	Form
Art 30; Academic Elective	3	3	Art apprec.;[2] Elective
	Women 31 hr.		
	Men 31 hr.		
Senior Year			
M. 150, Applied Music	4	4	Instrument 10
M. 280, 281, 282, 283; 299	3	2	Survey courses; Recital
M. 155	1	1	Chamber music
M. 100 or M. 103	1	1	Band, Orchestra
Elective	2	2	Music
Soc. Sci. 1, 2	3	3	Intro. gen. course[3]
	Women 27 hr.		
	Men 27 hr.		
	Total 132 hr. (Women)		
	138 hr. (Men)		

[1]Or Core Group C elective.*
[2]Or Core Group A elective.
[3]Or Core Group B elective.*
*A total of 16 hr. of Core group B and C are required with no less than 6 hr. in either area.

APPLIED CURRICULUM—VOICE

Freshman Year	*First Sem.*	*Second Sem.*	*Course Description*
M. 150, Voice	4	4	Voice 7
M. 150, Piano	2	2	Piano 2
M. 1, 2	4	4	First-year theory
M. 102 or M. 105	1	1	Choral organization
English 1, 2	3	3	Composition and rhetoric
Foreign Lang.	3	3	Italian, French, German[1]
Phys. Ed.	1	1	
Mil. Sci. or A.S. 1, 2 (M)	2	2	
	Women 36 hr.		
	Men 40 hr.		
Sophomore Year			
M. 150, Voice	4	4	Voice 8
M. 150, Piano	2	2	Piano 3
M. 3, 4	2	2	Second-year theory
M. 5, 6	2	2	Theory discussion
M. 140, 141	3	3	History of music
M. 102 or M. 105	1	1	Choral organization
Foreign Lang.	3	3	Italian, French, German
Phys. E. (W)	1	1	
Mil. Sci. or A.S. 3, 4 (M)	2	2	
	Women 36 hr.		
	Men 38 hr.		
Junior Year			
M. 150, Voice	4	4	Voice 9
M. 20	2	2	Intro. opera theatre
M. 253, 254	2	2	Counterpoint
M. 102 or M. 105	1	1	Choral organization
M. 252	3	-	Form
Foreign Lang.	3	3	Italian, French, German
Core Group B, C[2]	3	3	
	Women 33 hr.		
	Men 33 hr.		
Senior Year			
M. 150, Voice	4	4	Voice 10
M. 210	2	2	Opera theatre
M. 218, 219	1	1	Methods and pedagogy
M. 299	-	2	Recital
M. 280, 281, 282, or 283	3	-	Survey courses
Core Group A[3]	-	3	
M. 102 or M. 105	1	1	Choral organization
M. 220, 221	1	1	Repertoire
Elective	2	2	Music
	Women 30 hr.		
	Men 30 hr.		
	Total 135 hr. (Women)		
	141 hr. (Men)		

[1]One year each of Italian, French, German.
[2]One Core course from Group B and one Core course from Group C required.
[3]One Core course from Group A.

THEORY AND COMPOSITION CURRICULUM[1]

Freshman Year	*First Sem.*	*Second Sem.*	*Course Description*
M. 150, Applied	2	2	Applied music[2]
Elective	2	2	Music
M. 1, 2	4	4	First-year theory
M. 100, 102, 103, 105, or 155	1	1	Musical organization[3]
English 1, 2	3	3	Composition and rhetoric
Core Group C	4	4	
Phys. Ed.	1	1	
Mil. Sci. or A.S. 1, 2 (M)	2	2	
	Women 34 hr.		
	Men 38 hr.		
Sophomore Year			
M. 150, Applied	2	2	Applied music
Elective	2	2	Music
M. 3, 4	2	2	Second-year theory
M. 5, 6	2	2	Theory discussion
M. 114	2	2	Composition
M. 140, 141	3	3	History of music
M. 100, 102, 103, 105, or 155	1	1	Musical organization
French, German, Italian 1, 2	3	3	First-year foreign language[4]
Phys. Ed. (W)	1	1	
Mil. Sci. or A.S. 3, 4 (M)	2	2	
	Women 36 hr.		
	Men 38 hr.		
Junior Year			
M. 150, Applied	2	2	Applied music
Elective	2	2	Music
M. 252	3	-	Form
M. 253, 254	2	2	Counterpoint
M. 256	2	2	Composition
M. 117, 118	2	2	Instn.; Orchn. & Band Arr.
M. 100, 102, 103, 105, or 155	1	1	Musical organization
French, German, Italian 3, 4	3	3	Second-year foreign language
	Women 31 hr.		
	Men 31 hr.		
Senior Year			
M. 150, Applied	2	2	Applied music
Elective	2	2	Music
M. 183, 184	2	2	Conducting
M. 256, M. 255	2	2	Composition; Project[5]
M. 280, 281, 282, or 283	3	3	Survey courses
M. 120	2	-	Choral arranging
M. 100, 102, 103, 105, or 155	1	1	Musical organization
Core Group B	4	4	
	Women 34 hr.		
	Men 34 hr.		
	Total 135 hr. (Women)		
	141 hr. (Men)		

[1]A student working toward the degree of Bachelor of Music in Theory and Composition must have at least an average of "B" in the required freshman and sophomore Theory courses or consent of the department chairman.

[2]Candidates for this degree must complete grade level 8 on their major instrument and grade level 4 in piano.

[3]At least 4 credit hours must be in a major performing group.

[4]Another language may be substituted with the approval of the chairman of the Theory-Composition Department.

[5]Major project in Theory or Composition.

MUSIC EDUCATION CURRICULUM—VOCAL EMPHASIS

Freshman Year	*First Sem.*	*Second Sem.*	*Course Description*
M. 150, Applied Major	2	2	Voice 4 or Keyboard 4
M. 150, Applied Minor	1	1	Voice 2 or Piano 2A, 2B
M. 84	1	1	String class
M. 1, 2	4	4	First-year theory
M. 102 or M. 105	1	1	Choral organization
English 1, 2	3	3	Composition and rhetoric
Core C	4	4	
Phys. Ed.	1	1	
Mil. Sci. 1, 2 (M)	2	2	
	Women 34 hr.		
	Men 38 hr.		
Sophomore Year			
M. 150, Applied Major	2	2	Voice 5 or Keyboard 5
M. 150, Applied Minor	2	2	Voice 4 or Piano 3
M. 3, 4	2	2	Second-year theory
M. 5, 6	2	2	Theory discussion
M. 140, 141	3	3	History of music
M. 183, 184	2	2	Conducting
M. 102 or M. 105	1	1	Choral organization
Hist. 1, 2	3	3	World civilization
Phys. Ed. (W)	1	1	
Mil. Sci. or A.S. 3, 4 (M)	2	2	
	Women 36 hr.		
	Men 38 hr.		
Junior Year			
M. 150, Applied Major	2	2	Voice 6 or Keyboard 6
M. 80 or 82	1	1	Woodwind or brass class
M. 181, 182	3	3	Mus. Ed.—elem.; Mus. Ed.—sec.
M. 120	-	2	Choral arranging
M. 102 or M. 105	1	1	Choral organization
Educ. 105, 106	3	3	Human growth & development
Educ. 100	1	-	Orientation and selection
Soc. Sci. 1, 2	3	3	Intro. gen. course
Eng. 35, 36 or 127, 128	-	3	Types of lit.; Intro. to lit.
Math. 21, 22 or 15	2	2	Intro. to Math.; Calculus
	Women 36 hr.		
	Men 36 hr.		
Senior Year			
M. 150, Applied Major	2	2	Voice 7 or Keyboard 7
M. 86	1	-	Percussion class
M. 102 or M. 105	1	1	Choral organization
Eng. 35, 36 or 127, 128	3	-	Types of lit.; Intro. to lit.
Educ. 115	3	-	Student teaching—elementary
Educ. 130	2	-	Materials and methods—elem.
Educ. 125	-	4	Student teaching—secondary
Educ. 120	-	4	Principles of teaching
Educ. 169	-	2	Materials and methods—sec.
Health Ed. 102	-	2	Sec. school health program
Art 30	3	-	Apprec. of fine arts
Speech 3 or 11 or Drama 50	3	-	Voice and Diction; Prin. Oral Com.; Oral Interp.
	Women 33 hr.		
	Men 33 hr.		
	Total 139 hr. (Women)		
	145 hr. (Men)		

MUSIC EDUCATION CURRICULUM
INSTRUMENTAL EMPHASIS[1]

Freshman Year	*First Sem.*	*Second Sem.*	*Course Description*
M. 150, Applied Major	2	2	Major instrument 4
M. 150, Applied Piano or Instr.	1	1	Piano 1A, 1B or Instr. 3
M. 84	1	1	String class
M. 1, 2	4	4	First-year theory
M. 100 or 103	1	1	Band, Orchestra
English 1, 2	3	3	Composition and rhetoric
Core C	4	4	
Phys. Ed.	1	1	
Mil. Sci. or A.S. 1, 2 (M)	2	2	
	Women 34 hr.		
	Men 38 hr.		
Sophomore Year			
M. 150, Applied Major	2	2	Major instrument 5
M. 150, Applied Piano or Instr.	1	1	Piano 2A, 2B or Instr. 4
M. 82	1	1	Brass class
M. 3, 4	2	2	Second-year theory
M. 5, 6	2	2	Theory discussion
M. 140, 141	3	3	History of music
M. 183, 184	2	2	Conducting
M. 100, 102, 103	1	1	Band, Orchestra; (Chorus)[2]
Hist. 1, 2	3	3	World civilization
Phys. Ed. (W)	1	1	
Mil. Sci. or A.S. 3, 4 (M)	2	2	
	Women 36 hr.		
	Men 38 hr.		
Junior Year			
M. 150, Applied Major	2	2	Major instrument 6
M. 80, 81, Applied Class	1	1	Woodwind class
M. 117, 118	2	2	Instn.; Orchn. & Band Arr.
M. 181, 182	3	3	Mus. Ed.—elem.; Mus. Ed.—sec.
M. 100, 102, 103	1	1	Band Orchestra; (Chorus)[2]
Educ. 105, 106	3	3	Human growth & development
Educ. 100	1	-	Orientation and selection
Soc. Sci. 1, 2	3	3	Intro. gen. course
Eng. 35, 36 or 127, 128	-	3	Types of lit.; Intro. to lit.
Math. 21, 22 or 15	2	2	Intro. to Math.; Calculus
	Women 38 hr.		
	Men 38 hr.		
Senior Year			
M. 150, Applied Major	2	2	Major instrument 7
M. 150, Applied Voice	1	1	Voice 1
M. 86	-	1	Percussion class
M. 100, 102, 103	2	2	Band, Orchestra; (Chorus)[2]
English 35, 36 or 127, 128	3	-	Types of lit.; Intro. to lit.
Educ. 115	3	-	Student teaching—elementary
Educ. 130	2	-	Materials and methods—elem.
Educ. 125	-	4	Student teaching—secondary
Educ. 120	-	4	Principles of teaching
Educ. 169	-	2	Materials and methods—sec.
Health Ed. 102	-	2	Sec. school health program
Art 30	3	-	Apprec. of fine arts
Speech 3 or 11 or Drama 50	3	-	Voice and Diction; Prin. Oral Com.; Oral Interp.
	Women 37 hr.		
	Men 37 hr.		
	Total 145 hr. (Women)		
	151 hr. (Men)		

COURSES OF INSTRUCTION IN MUSIC

1. **Theory.** I, II. 4 hr. Thorough training in the melodic, harmonic and rhythmic elements of music. Triads, intervals, keys, scales, cadences, notation, rhythmic reading, sight singing, melodic and harmonic dictation.

2. **Theory.** I, II. 4 hr. PR: Music 1. Continuation of the melodic and harmonic dictation. Seventh chords, modal scales, key relationships, modulation, transposition, and the study of four-part writing.

3. **Theory.** I, II. 2 hr. PR: Music 2. Advanced dictation and sight-singing.

4. **Theory.** I, II. 2 hr. PR: Music 3. Continuation of Music 3.

5. **Theory Discussion.** I. 2 hr. PR: Music 2 or consent. Partwriting, harmonization, harmonic and formal analysis.

6. **Theory Discussion.** II. 2 hr. PR: Music 5. Continuation of Music 5.

10. **Appreciation of Music.** I, II. 3 hr. An introductory course designed to develop an appreciation and understanding of the significance of music as a fine art, and to help the student develop intelligent listening habits. Musical terminology and historical data are presented as needed but central to the course is the listening experience. Not open to music majors.

11. **Music As an Art and Science.** I, II. 2 hr. Fundamental music skills and knowledge for elementary classroom teachers. Not open to music majors.

12. **Music Materials and Procedures.** I, II. 2 hr. PR: Music 10 or equiv., and Music 11. Methods and materials for elementary classroom teachers. Not open to music majors.

20. **Introduction to Opera Theatre.** I, II. 0-2 hr. Max. credit 8 hr. PR: Consent. Practical work in all aspects of lyric theatre production. Development of lyric theatre stage technique through movement studies, performance in minor roles, and operatic scenes.

80. **Woodwind Class.** I, II. 1 hr. Beginning instruction on woodwind instrument. May be repeated for credit; maximum credit 2 hr.

82. **Brass Class.** I, II. 1 hr. Beginning instruction on brass instrument. May be repeated for credit; maximum credit 2 hr.

84. **String Class.** I, II. 1 hr. Beginning instruction on strings. May be repeated for credit; maximum credit 2 hr.

86. **Percussion Class.** I, II. 1 hr. Beginning instruction on percussion.

100. **Band.** I, II. 0 to 1 hr.

102. **University Choral Union.** I, II. 0 to 1 hr.

103. **University-Community Symphony Orchestra.** I, II. 0 to 1 hr.

105. **University Choir.** I, II. 0 to 1 hr.

114. **Composition.** I, II. 2 hr. PR: Music 4 or consent. Creative writing. Course may be repeated for credit. Maximum credit 8 hr.

117. **Instrumentation.** I. 2 hr. PR: Music 2. Study of the characteristics of band and orchestral instruments and their use in scoring.

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[1]Music Education—Keyboard majors in instrumental emphasis must complete level 4 on one other instrument.

[2]Music Education—Instrumental majors are required to be in a major choral group for at least one year.

118. **Orchestration and Band Arranging.** II. 2 hr. PR: Music 117. Problems in scoring for orchestral ensembles and band.

120. **Choral Arranging.** II. 2 hr. PR: Music 2. A study of the characteristics and problems in scoring for choral combinations.

138. **Introduction to Music History.** II. 3 hr. PR: Music 10 or consent of instructor. Main trends of musical thought and style. Not open to music majors.

140. **History of Music.** I. 3 hr. Survey of music history from the pre-Christian era to the baroque.

141. **History of Music.** II. 3 hr. Survey of music history from the baroque to the contemporary period.

150. **Applied Music.** I, II. 0-4 hr. Open to qualified students in any field in Applied Music. Course number may be repeated as many times as necessary or desirable. Credit given at the following rates:

1. For music majors, two hours for each 30-minute weekly lesson.
2. For other students, a maximum of one 30-minute lesson per week for one hour of credit.
3. Students in lower grade levels of Applied Music may be grouped in small classes for initial instruction. 1-2 hr. credit.

155. **Chamber Music.** I, II. 0 to 1 hr. PR: Consent. This course provides the opportunity to perform in small ensembles. Course may be repeated.

181. **Music Education.** I. 3 hr. Essentials of music education in the elementary grades.

182. **Music Education.** II. 3 hr. Essentials of music education in junior and senior high school.

183. **Conducting.** I. 2 hr. A basic course in conducting techniques, both choral and instrumental.

184. **Conducting.** II. 2 hr. PR: Music 183. Continuation of Music 183, including more advanced score reading and conducting techniques, both choral and instrumental.

200. **Band, Orchestra, Choral, Opera Theatre, and Music Education Clinics.** 2 hr. Special problems of organization and development of the various performing organizations. Lecture, laboratory and discussion groups.

201. **Music in the Elementary School.** I, II. 2 hr. PR: Music 10, 11, 12, or consent. Development of skills, procedures, techniques, and materials used by the general classroom teacher of music in grades 1-8. Not open to music majors.

210. **Opera Theatre.** I, II. 0-2 hr. Max. credit 8 hr. PR: Music 20 or consent. Continuation of Music 20. Performance of major roles and advanced production techniques. Qualified students will undertake production-direction projects under supervision.

218. **Methods and Pedagogy in Major Applied Fields.** I. 1 hr. PR: Music 150.

219. **Methods and Pedagogy in Major Applied Fields.** II. 1 hr. PR: Music 218.

220. **Repertoire.** I. 1 hr.

221. **Repertoire.** II. 1 hr.

246. **Music in the Junior High School.** 2 hr. PR: Music 181-182 or equiv. A consideration of the potentialities and special needs of the junior high school in music education; programs, procedures, and materials.

252. **Analysis of Musical Form.** I. 3 hr. PR: Music 6 or consent. A detailed study of the structure of music.

253. **Counterpoint.** I. 2 hr. PR: Music 6 or consent. Sixteenth century counterpoint.

254. **Counterpoint.** II. 2 hr. PR: Music 6 or consent. Eighteenth century counterpoint.

255. **Major Project in Composition or Theory.** 2 hr. PR: Music 6.

256. **Upper Division Composition.** 2 hr. PR: Four semesters Music 114, or consent based on scores submitted. Creative writing with emphasis on practical composition for performance. May be repeated for credit.

280. **Survey of Operatic Music.** I. 3 hr. PR: Music 141.

281. **Survey of Symphonic Music.** II. 3 hr. PR: Music 141.

282. **Studies in Contemporary Music.** I. 3 hr. PR: Music 141.

283. **Survey of Chamber Music.** 3 hr. PR: Music 141.

284. **Collegium Musicum.** I, II. 0-2 hr. Performance of outstanding musical works not in the standard repertory. Although open as a performance group to upperclassmen, graduate students will select appropriate vocal and instrumental music, investigate modes of performance, prepare any necessary editions, and direct rehearsals under supervision. May be repeated for credit.

299. **Recital.** I, II. 0 to 2 hr. Not available for graduate credit. To be used to fulfill applied major graduation requirement only when the student has achieved grade level 9. Students who have reached grade level 6 may receive 1 hour credit, which may not be used to fulfill graduation recital requirement.

BEGINNING APPLIED CLASSES

Class instruction at the beginning levels is provided for 1 hour credit on the following instruments and in voice:

Woodwind—Music 80; Brass—Music 82; String—Music 84; Percussion—Music 86; Piano—Music 150, Sections 30-49; Voice—Music 150, Sections 50-69.

ORGANIZATIONS

Music organizations available to all University students with or without 1 hour credit are: Band—Music 100; University Choral Union—Music 102; University-Community Symphony Orchestra—Music 103; University Choir, University Singers—Music 105; Chamber Music—Music 155; Opera Theatre—Music 20 and 210; Collegium Musicum—Music 284 (0 to 2 hr.).

GRADUATE STUDY

The Division of Music offers programs of study leading to the Master of Music degree (with major areas in Music Education, Theory, Applied Music, Composition, and History of Music), the Doctor of Philosophy degree (with fields of specialization in Theory, Music Education, Musicology, or Composition), the Doctor of Musical Arts degree in Piano and Voice, and, jointly in cooperation with the College of Human Resources and Education, the Doctor of Education degree in Music Education. Refer to current Graduate School *Announcements* for further details regarding admission, requirements, curricula, and graduate courses.

EXTENSION DIVISION

288. **Music Education.** I. 3 hr. PR: Consent. A study of the fundamentals of music, and the procedures and materials used in teaching music in the elementary classroom. Credit for this course will satisfy only First Class Certificate renewal or an elective on a degree which permits open electives. Cannot be used to renew an emergency certificate of any type. Offered only in the University Extension Division. Not open to music majors.

289. **Music Education.** II. 3 hr. PR: Music 288. Continuation of Music 288. Credit for this course will satisfy only First Class Certificate renewal or an elective on a degree which permits open electives. Cannot be used to renew an emergency certificate of any type. Offered only in the University Extension Division. Not open to music majors.

290. **Choral Conducting and Procedures.** I. 3 hr. PR: Consent. The organization and development of school and community choral groups with particular emphasis on conducting techniques, choral music materials, and choral teaching procedures. Credit for this course will satisfy only First Class Certificate renewal or an elective on a degree which permits open electives. Cannot be used to renew an emergency certificate of any type. Offered in the University Extension Division only. For non-music majors only.

291. **Choral Conducting and Procedures.** II. 3 hr. PR: Music 290 or consent. Continuation of Music 290. Credit for this course will satisfy only First Class Certificate renewal or an elective on a degree which permits open electives. Cannot be used to renew an emergency certificate of any type. Offered in the University Extension Division only. For non-music majors only.

292. **History and Appreciation of Music.** I. 3 hr. PR: Consent. The history and appreciation of music from the Christian era through the baroque period. Credit for this course will satisfy only First Class Certificate renewal or an elective on a degree which permits open electives. Cannot be used to renew an emergency certificate of any type. Offered in the University Extension Division only. For non-music majors only.

293. **History and Appreciation of Music.** II. 3 hr. PR: Music 292 or consent. Continuation of Music 292 including the classic, romantic and modern periods. Credit for this course will satisfy only First Class Certificate renewal or an elective on a degree which permits open electives. Cannot be used to renew an emergency certificate of any type. Offered in the University Extension Division only. For non-music majors only.

294. **Class Piano.** I. 2 hr. PR: Consent. Credit for this course will satisfy only First First Class Certificate renewal or an elective on a degree which permits open electives. Cannot be used to renew an emergency certificate of any type. Offered in the University Extension Division only. For non-music majors only.

295. **Class Piano.** II. 2 hr. PR: Music 294 or consent. Credit for this course will satisfy only First Class Certificate renewal or an elective on a degree which permits open electives. Cannot be used to renew an emergency certificate of any type. Offered in the University Extension Division only. For non-music majors only.

APPLIED MUSIC REQUIREMENTS

Undergraduate Applied Music Requirements*

Applied grade levels for entering students are listed in the outlines of the various curricula. These grade levels are based upon normal progress expected of students to enable them to fulfill necessary grade level requirements for graduation. Students who do not meet indicated grade levels must make up their deficiencies as soon as possible, and are subject to probation.

When the faculty feels the deficiencies are so great and the student's musical talent so minimal that the possibility of fulfilling graduation requirements is impossible, the student will be notified that his enrollment in the Division of Music will be terminated.

*Credit in Applied Music is transferred by examination only.

Applied Music Majors

Applied Music majors must complete at least grade level 3 in piano to be eligible for graduation.

Applied Music majors must complete grade level 10 on their major instrument to be eligible for graduation.

Theory and Composition Major

Theory and Composition majors must complete grade level 8 on their major instrument or voice to be eligible for graduation.

Music Education Majors

Music Education majors must complete level 7 on their major instrument or voice to be eligible for graduation. Vocal Emphasis majors must complete grade level 3 in piano; Instrumental Emphasis majors must complete grade level 2B in piano. Vocal Emphasis majors who have piano as the applied major must complete grade level 4 in voice. Instrumental Emphasis majors who have piano as the applied major must complete grade level 4 on a band or orchestra instrument.

COURSES IN APPLIED MUSIC†

Class Piano — Music 150 Sections 30 to 49

1A

Oxford Piano Course for Adult Beginner, Ada Richter; Piano Course for the Older Beginner or Basic Piano, Cheyette and Shake. Harmonization, transposition, and sight reading of simple melodies. Scales and arpeggios.

1B

Continuation of 1A.

2A

Second Solo Book, Diller-Quaile; Young Pianists Library, Denes Agay; Library for Piano Students, Frances Clark. Continuation of harmonization, transposition, and sight reading. Scales and arpeggios.

2B

Third Solo Book, Diller-Quaile; Bach for Beginners. Scales, all major and harmonic minors, hands together, 2 octaves, arpeggios. Sight reading four-part harmony, chord progressions. Ability to play familiar tunes with accompaniments.

Piano — Music 150 Section 09

Primary Piano A and B

A choice from the following material: Thompson, Teaching Little Fingers to Play; Fletcher, Music Lessons Have Begun; Frances Clark Library, Tune Time, Books A & B, and Technic Time, Books A & B; Diller-Quaile, First Solo Book.

Technic—Major scales, to be played hands separately in quarter notes, one and two octaves, 4/4 time M.M. quarter note = 88.

Piano 1

Thompson, First Grade Etudes; Bentley, Four and Twenty Melodies; Frances Clark Library, Piano Literature, Book 1, and Contemporary Literature, Book 1, Royal Conservatory of Toronto Method, Grade 1; Frost, The Adult at the Piano, Books I and II.

Technic—All major scales, to be played hands separately in quarter and eighth notes, two octaves, 4/4 time, M.M. quarter notes = 92.

†The material outlined in the various grade-levels is to be used as a guide and will vary with individual students. Students' grade-levels are based primarily on their technical and musical achievements.

PIANO 2

Hirschberg, Technic is Fun; Czerny-Germer, Studies Vol. 1, Part 1; Streabog, Twelve Easy and Melodious Studies; Terry, Sunny Corner; Bach-Carroll, First Lessons in Bach, Book 1; Frances Clark Library, Piano Literature of 17th, 18th and 19th Centuries, Book 2 and Contemporary Literature, Book 2; Bentley, Summertime Sketches; Gretchaninoff, Children's Book, Opus 98; Kabalevsky, Twenty-four Pieces for Children, Opus 39; Tansman, Pour les Enfants, Set 1.

Technic—All major and harmonic minor scales, to be played hands separately M.M. quarter note = 96, as follows: One octave in quarter notes. Two octaves in eighth notes. Hands together in quarter notes.

Arpeggios—Diminished sevenths, to be played hands separately, M.M. quarter note = 88.

PIANO 3

Burgmuller, *Studies,* Opus 100; Bertini, *Studies,* Opus 100; Bach-Carroll, *First Lessons in Bach,* Book 1; *Easy Sonatinas* by composers such as Beethoven, Clementi, Kuhlau, Mozart, etc.; Suggested supplementary material: Bartok, *For Children,* Vols. I and II; Bloch, *Enfantines;* Prokofieff, *Music for Children,* Opus 65; *Meet Modern Music,* Parts 1 and 2; Schumann, *Album for the Young.*

Technic—All major, harmonic minor scales, to be played hands together, one octave apart, M.M. quarter note = 72, in the following forms: One octave in quarter notes. Two octaves in eighth notes. Three octaves in eighth notes (triplets). Four octaves in sixteenth notes.

Arpeggios—All diminished sevenths, and major and minor white key triad arpeggios, hands together to be played in similar patterns as scales, M.M. quarter note = 66.

PIANO 4

Bertini *Studies,* Opus 29; Loeschhorn, *Studies,* Opus 66, 169, 170; Bach—Two-part Inventions, 18 Little Preludes; Bach-Carroll, *First Lessons in Bach,* Book 2; Sonatinas and Sonatas by composers such as Beethoven, Clementi, Haydn, Kuhlau, Mozart, etc.; Grieg, *Lyrical Pieces,* Opus 12; Tansman, *Ten Diversions for the Young Pianist.*

Technic—All major and minor scales (harmonic and melodic) to be played hands together, M.M. quarter note = 80 in the following forms: One octave in quarter notes. Two octaves in eighth notes. Three octaves in eighth notes (triplets). Four octaves in sixteenth notes.

Arpeggios—All diminished sevenths, major and minor triads in inversions to be played in similar patterns as scales, M.M. quarter note = 72.

PIANO 5

Czerny, *School of Velocity,* Opus 299; Bach, *Two-Part Inventions,* 18 Little Preludes and Fugues, Easier movements from Suites; Sonatas of appropriate difficulty by Beethoven, Haydn, and Mozart, such as *Beethoven,* Opus 49; Haydn, *Sonata in E minor;* Mozart, *Sonata in G major,* K. 283; Mendelssohn, *Songs Without Words;* Beethoven, *Six Variations on "Nel cor piu non mi sento";* Debussy, Easier Preludes.

Technic—All major and minor scales (harmonic and melodic) to be played in parallel motion, M.M. quarter note = 84. Major scales to be played in contrary motion, M.M. quarter note = 84.

Arpeggios—All diminished sevenths, major and minor triads to be played in inversions, M.M. quarter note = 76.

PIANO 6

Czerny, *School of Velocity,* Opus 299; Cramer, *Studies;* Bach, *Three Part Inventions,* Easier Preludes and Fugues from the *Well-Tempered Clavier;* Sonatas by Haydn, Mazort, and Beethoven equivalent in difficulty to Opus 14, No. 1, Opus 10. No. 1 and Opus 79. Chopin, selected *Preludes and Mazurkas;* Schumann, *Forest Scenes;* Debussy, selected *Preludes* or materials of similar difficulty.

Technic—All major scales to be played in parallel and contrary motion and in thirds and tenths, M.M. quarter note = 92. All minor scales to be played in parallel and contrary motion, M.M. quarter note = 92.

Arpeggios—All diminished sevenths, major and minor triads, and dominant sevenths to be played in inversions, M.M., quarter note = 84.

PIANO 7

Czerny, *Studies*, Opus 740; Clementi, *Gradus ad Parnassum;* Bach, *Three Part Inventions, Suites, Preludes and Fugues* from the *Well-Tempered Clavier;* Beethoven, Sonatas equivalent in difficulty to Opus 10 No. 3 and Opus 28; Romantic compositions such as Brahms—easier *Intermezzi* and *Capriccios.*

Technic—All major and minor scales in thirds, sixths, and tenths, and in parallel and contrary motion, M.M. quarter note = 100. Chromatic Scales.

Arpeggios—All major and minor triads, diminished and dominant sevenths in inversions, M.M. quarter note = 92.

PIANO 8

Clementi, *Gradus ad Parnassum;* Moszkowski, *Etudes;* Cramer, *Studies;* Bach, *Well-Tempered Clavier* and *Suites;* Beethoven, *Sonatas*, equivalent in difficulty to Opus 2, No. 3, Opus 54, Opus 31; Concertos by Mozart or Mendelssohn; Romantic and modern compositions by Chopin, Schumann, Schubert, Debussy, Kabalevsky, etc.

Technic—All scales and arpeggios as in piano 7 with increased M.M. speeds.

PIANO 9

Bach, *Well-Tempered Clavier, Toccatas, Partitas;* Beethoven, *Sonatas* such as Opus 27; Chopin, *Etudes, Scherzi, Polonaises;* Schumann, *Papillons;* Easier works of Brahms, Liszt; Ravel, *Sonatine;* Contemporary compositions.

Technic—Same as in piano 8 with increased speeds.

PIANO 10

Chopin, *Etudes;* Bach, *Italian Concerto; Well-Tempered Clavier;* Beethoven, *Sonatas, Piano Concertos;* Brahms, *Rhapsodies* in g and b minor, pieces from Opus 76, 78, 116, 119; Chopin, *Ballades;* Debussy, *Preludes, Pour le Piano;* Bartok, *Suite* Opus 14; Hindemuth, *Sonata* No. 3; Contemporary compositions.

Technic—Same as in piano 9.

GRADUATE

Chopin, Liszt, *Etudes;* Bach, *Chromatic Fantasy and Fugue;* Beethoven, *Late Sonatas* and Opus 53, 57; *"Emperor" Concerto;* Chopin, *Sonatas;* Brahms, pieces from Opus 116, 117, 118, 119, *Variations on a Theme by Handel, Variations on a Theme by Pagannini, Concertos* in B flat major and d minor; Schumann, *Carnaval, Symphonic Etudes;* Ravel, *Toccata;* Prokifieff, *Sonata* No. 7; Barber, *Sonata*, Opus 26.

Technic—Same as in piano 10 plus scales in double octaves and double thirds.

PIPE ORGAN — MUSIC 150 SECTION 10

To be accepted as an undergraduate Applied Music Major in Organ, a student must demonstrate grade-level 5 in Piano.

Students other than Applied Organ majors must demonstrate grade-level 4 in Piano prior to studying Organ.

ORGAN 1

Instruction drawn from: Dupre, *Methode d'Orgue;* Gleason, *Method of Organ Playing;* Peeters, *Little Organ Book.*

Technic—Pedal scales.

Hymn study.

ORGAN 2

Bach, selections from *Eight Little Preludes and Fugues;* Keller, selections from 80 *Chorale Preludes;* Langlais, *Organ Book* 10 *Pieces.*

Technic—Pedal scales.

Hymn study.

ORGAN 3

Bach, selections from *Eight Little Preludes and Fugues;* Buszin (ed.), *Chorale Preludes by Masters of 17th and 18th Centuries;* Dupre, 79 *Chorales.*

Technic—Pedal scales with hands in parallel motion at the tenth.
Styles of Hymn playing including simple transposition.

ORGAN 4

Bach, *"Cathedral" Prelude and Fugue in D Minor*, selections from the *Liturgical Year;* Peeters, *Early Flemish Masters;* Mendelssohn, *Sonata* in C Minor; simple pieces by Sowerby, Willan and Bingham.

Technic—Pedal scales with hands in contrary motion. Hymn playing, transposition, simple anthem accompaniments.

ORGAN 5

Bach, *Little Fugue in G Minor, Prelude and Fugue in C Minor,* selections from the *Liturgical Year;* Bonnet (ed.), selections from Volume 1 Historical Recital Series; Mendelssohn, *Prelude and Fugue in C Minor;* Franck, *Chorale in A Minor;* Langlais, *Nine Pieces;* selected slow movements from a Widor and a Vierne symphony.

Technic—Pedal scales with hands in contrary and parallel motion.
Hymn playing, transposition, anthem accompaniments of medium difficulty.

ORGAN 6

Bach, *Prelude and Fugue in F Minor, Toccata and Fugue in D Minor,* two *Schubler Chorales;* Bonnet (ed.), Volume 1 *Historical Recital Series;* Mendelssohn, *Sonata in F Minor;* Franck, *Piece Heroique;* Brahms—*Chorale Preludes;* Pepping, *Kleines Orgelbuch;* contemporary compositions comparable in difficulty to Peeters, *Variations on an Original Theme* Op. 58.

Technic—Continuation of Level 5.
Hymn playing, anthem accompaniments, playing portion of AGO test papers.

ORGAN 7

Bach, *Preludes and Fugues* in A Minor and D Major, *Trio Sonata* 1, selected Chorales from *Organ Mass;* selected works of Pachelbel; Mendelssohn, *Sonata* in D Minor; Franck, *Chorale in B Minor;* Widor, *Allegro* from *Sixth Symphony;* contemporary works by Walcha, Dupre, Langlais and Messiaen.

Hymn playing, anthem accompaniments, AGO test papers.

ORGAN 8

Bach, *Passacaglia and Fugue, Trio Sonata* V, one *Concerto,* one of 18 *Great Chorales;* selected works of Sweelinck; Liszt, *Prelude and Fugue on B-A-C-H;* Widor, *Theme and Variations* from *Fifth Symphony;* Vierne, *Symphony* 1; contemporary works comparable in difficulty to Dupre, *Cortege et Litanie.*

Hymn playing, oratorio accompaniments, AGO test papers.

ORGAN 9

Bach, Preludes and Fugues in E-flat and B Minor, *Trio Sonata* III, *Chorale Variation Vom Himmel Hock;* selected works of Buxtehude; Reubke, *Sonata on 94th Psalm;* Handel, an organ *Concerto;* Hindemith, *Sonata* 1; contemporary works comparable in difficulty to Willan, *Introduction, Passacagia and Fugue.*

Oratorio accompaniment.

ORGAN 10

Bach, selected major works comparable in difficulty to *Toccata in F,* one *Chorale Variation,* one of 18 *Great Chorales;* selected works of Frescobaldi; Handel—an organ *Concerto;* selection from Bonnet (ed.), Volume III *Historical Recital Series;* Vierne, *Second Symphony;* larger contemporary works comparable in difficulty to Dupre, *Variations on a Noel.*

Oratorio accompaniment.

VIOLIN — MUSIC 150 SECTION 17

VIOLIN 1

Studies: *Studies,* Laoureaux; *Foundation Studies,* Book I, Wohlfarht; Compositions: *Fifty Very Easy Pieces in the First Position,* Gruenberg; *Begin With Pieces,* Riegger; other compositions comparable to difficulty of studies.

Technic—Fundamentals, proper position of left and right hands in holding the violin and bow, elementary studies for left and right hands. Ability to place all fingers on each of the natural and altered tones within the compass of the first position. Tuning. Major scales and arpeggios in the first position. Use of various rhythms (eighth notes, sixteenth notes, triplets, dotted eighth to sixteenth notes).

VIOLIN 2

Studies: *Studies*, Book 2, Laoureaux; *Foundation Studies*, Book 2, Wohlfarht. Compositions: *Twelve Easy Pieces, Opus* 12, Pracht; *Dinkey Doodle*, *Contra Dance*, *Peter Rabbit*, *Polka*, Kroll; other solos of comparable difficulty.

Technic—Major and minor scales and arpeggios in the first position. A broader use of bowing variations.

VIOLIN 3

Studies: *School of Violin Technique*, *Opus* 1, *Book* 1, Sevcik; *Opus* 8, Sevcik, *Studies*, *Opus* 20, *Book* 1, Kayser; *Double Stop Studies*, Hoffman. Concertos: *Concertos No.* 2, *No.* 5 Seitz; other solos of comparable difficulty.

Technic—Two octave major and minor scales and arpeggios in the first three positions.

VIOLIN 4

Studies: *School of Violin Technics, Part* 1, Schradieck; *Opus* 38, Dont; *Opus* 1, *Book* 2, Sevcik; *Opus* 3, Sevcik. Concerto: *Concerto in A minor*, Vivaldi. Compositions; *Rondino in E-flat major*, Beethoven-Kreisler; other solos of comparable difficulty.

Technic—Two octave major and minor scales and arpeggios. Various bowings and rhythms. One octave scales in double stops.

VIOLIN 5

Studies: *Opus* 37, Dont; *Opus* 36, *No.* 1, Mazas; *Bowing Studies*, Casorti; *School of Violin Technics, Part* 1, Schradieck. Concertos: *Concerto in G minor*, Vivaldi; *Concerto in D major*, Seitz; others of comparable difficulty. Sonatas: *Sonata No.* 1 *in D major*, *Sonata No.* 3 *in C major*, Corelli.

Technic—Selected three octave major and minor scales and arpeggios. Scales in double stops.

VIOLIN 6

Studies: *Opus* 36, Mazas; selected studies, Kreutzer; *Scale Studies*, Flesch; *School of Violin Technics, Part* 2, Schradieck. Concertos: *No.* 2, *No.* 7, *No.* 9, De Beriot; *No.* 22, Viotti; *E minor*, Nardini; others of comparable difficulty. Sonatas: Handel; Tartini.

Technic—All major and minor scales in three octaves, three forms of minor and chromatic using different time values and various bowings (staccato, spiccato, martele, detache). A more advanced skill in double stops, bowing combinations, octave passages, and other technical string devices.

VIOLIN 7

Studies: Kreutzer: Concertos: Kreutzer, Rode, Viotti, Nardini, other concertos of comparable difficulty. Sonatas: Handel, Veracini. Compositions: *Romances*, Beethoven; Kreisler, original compositions and arrangements; other compositions of comparable difficulty.

Technic—*Scale Studies*, Flesch; *School of Violin Technics, Part* 2, *Part* 3, Schradieck.

VIOLIN 8

Studies: *Etudes*, Fiorillo; selected etudes, Rode. Concertos: *Concerto in A minor*, Bach; *Concerto in A major*, Bach; *Concerto in G major*, Mozart; *Concerto in D major*, Mozart; other concertos of comparable difficulty. Sonatas: Veracini; Mozart; *Solo Sonatas and Partitas* (selected movements), Bach. Compositions: *Praeludium and Allegro*, Kreisler; *La Folia*, Corelli; *Chaconne*, Vitali; other compositions of comparable difficulty.

Technic—*Scale Studies*, Flesch; *Opus* 1, *Book* 3, Sevcik.

VIOLIN 9

Studies: *Etudes,* Rode; *Etudes, Opus* 19, Alard. Concertos: *Concerto in A major,* Mozart; *Concerto No.* 2, Spohr; other concertos of comparable difficulty. Sonatas: Beethoven; *Solo Sonatas and Partitas,* Bach. Compositions of comparable difficulty.

Technic—*Scale Studies,* Flesch. *Opus* 1, *Book* 3 (continued), Sevcik.

VIOLIN 10

Studies: *Etudes,* Gavinies; *Opus* 35, Dont; *Etudes, Opus* 1, Schradieck. Concertos; *Concerto in G minor,* Bruch; *Concerto No.* 9, Spohr; *Concerto in E minor,* Mendelssohn; other concertos of comparable difficulty. Sonatas: Beethoven; *Sonata in A major,* Brahms; Piston; *Solo Sonatas and Partitas,* Bach. Compositions: Representative compositions of 19th and 20th century composers. Student should have an extensive knowledge of violin literature, including the works of Corelli, Tartini, Bach, Mozart, Beethoven, Wieniawski, Viotti, Rode, Kreutzer, Vieuxtemps, Saint-Saens, and representative works of 20th century composers.

Technic—*Scale Studies,* Flesch; *Opus* 1, *Book* 4, Sevcik.

VIOLA — MUSIC 150 SECTION 16

VIOLA 1

Bow and Strings, Book 1, Hermann; *First Studies, Opus* 86, Hofmann.

Technic—Fundamentals, proper position of left and right hands in holding the viola and bow, elementary studies for left and right hands. Ability to place all fingers on each of the natural tones within the compass of the first position. Tuning. Major scales and arpeggios in the first position. Use of various rhythms (eighth notes, sixteenth notes, dotted eighths to sixteenth notes).

VIOLA 2

A Tune a Day, Book 3, Herfurth; *Bow and Strings,* Book 3, Hermann; *Introducing the Positions,* Whistler; *Foundation Studies,* Book 2, Wohlfarht; *Old Masters for Young Players,* edited by Palaschko, Moffat.

Technic—Major and minor scales and arpeggios in the first position. A broader use of bowing variations.

VIOLA 3

Studies: 20 *Progressive Exercises, Opus* 38, edited by Svecenskl, Dont; *Viola Music for Concert and Church,* Boetje.

Technic—Two octave major and minor scales and arpeggios in the first three positions.

VIOLA 4

Studies: 40 *Studies,* Bruni; *Student Concerto No.* 3; Seitz; *Divertimento,* Haydn-Piatigorsky.

Technic—Two octave major and minor scales and arpeggios. Various bowings and rhythms. One octave scales in double stops.

VIOLA 5

Studies: *Opus* 36, *Book* 1, Mazas; *Concerto in G Minor,* Telemann; *Sonata in F Major,* Marcello.

Technic—Selected three octave scales, major and minor, and arpeggios. Scales in double stops.

VIOLA 6

Studies: *Opus* 36, Mazas; *Selected Studies,* Kreutzer; *Concerto,* Hoffmeister; *Sonatas,* Corelli, Handel.

Technic—All major and minor scales in three octaves, three forms of minor and chromatic using different time values and various bowings (staccato, spiccato, martele, detache). A more advanced skill in double stops, bowing combinations, octave passages, and other technical string devices.

VIOLA 7

Studies: 42 *Studies,* Kreutzer; *Caprices,* Campagnoli, *Sonatas for Viola Da Gamba,* Bach; *Concerto in D Major, Opus* 1, Stamitz. Other solos of comparable difficulty.

Technic—*Scale Studies,* Flesch.

VIOLA 8

Studies: Fiorillo; *Selected Studies,* Rode; *Unaccompanied Cello Suites,* Bach; *Sonata in A Major, No.* 6, Boccherini; *La Folia,* Corelli.

Technic—*Scale Studies,* Flesch.

VIOLA 9

Studies: *Etudes,* Rode; *Twelve Caprices,* L. Fuchs; *Arpeggione Sonata,* Schubert; *Sonatas,* Brahms.

Technic—*Scale Studies,* Flesch.

VIOLA 10

Studies: *Etudes,* Gravines; *Opus* 35, Dont; *Sonata, Opus* 11, *No.* 4, Hindemith; *Concerto,* Walton.

Technic—*Scale Studies,* Flesch.

VIOLONCELLO — MUSIC 150 SECTION 03

VIOLONCELLO 1

Position of 'cello. Holding of the bow with simple exercises on open strings to develop good basic sound production. Fundamental fingering positions of left hand. Tuning of instrument. Etudes: Work of the difficulty of Joseph Werner, *Practical Method of Violoncello,* Opus 12, Part 1; or *Violoncello Method,* Book 1, Dotzauer-Klingenberg. Elementary folk melodies and pieces in first position.

Technic—Scales in first position (no extensions).

VIOLONCELLO 2

Continuing work on production of good sound, correct position of both hands and instrument, and good intonation. Studies in use of extended position. Drill in interchangeable use of extended and regular positions, left hand. Etudes: Continuing use of above *Methods* with other exercises to develop dexterity in extended and regular positions.

Technic—Scales in first position using both extended and regular positions.

VIOLOCELLO 3

Continuing emphasis on good intonation at all times, as well as good position and improved sound. Introduction of 4th position, 3rd position, 2nd position, raised 1st position and half position. Exercises in each position, separately, as well as extensive drill in shifting from position to position and combining extensions and regular positions in scales as well as etudes and pieces. Etudes: Completion of above *Methods.* (Werner, Part 1 or Dotzauer-Klingenberg, Book II). Pieces in first four positions involving extended and regular positions, shifting, and emphasizing melodic playing.

Technic—Scales, both major and minor, the first four positions, emphasizing correct shifting.

VIOLONCELLO 4

Continuing emphasis on good intonation, and improved sound production with addition of vibrato. Continued drill in first four positions, both extended and regular, and shifting. Introduction of 5th, 6th, and 7th positions. Etudes: Work of difficulty of Alwin Schroeder, 170 *Foundation Studies,* Vol. I; or 113 *Studies for Violoncello,* Vol. I, Dotzauer. Introduction of Sonatas (Handel, Marcello, Vivaldi) as well as continuing use of short pieces of more difficult nature.

Technic—Scales, major and minor, two octaves, all positions through 7th. Emphasis on shifting as well as improved sound production. Various bowings and rhythmic patterns.

VIOLONCELLO 5

Continuing work with vibrato, developing improved sound production. Development of musical expressiveness and awareness. Introduction of various bowings—bouncing bow, detache, staccato, etc. Introduction of thumb position. Etudes: Continuing use of Schroeder and Dotzauer Studies. Sonatas by Vivaldi (E minor), Marcello (F major) or works of similar difficulty. Short works of comparable difficulty.

VIOLONCELLO 6

Continuing development of good sound production along with development of dexterity of bow and left hand. Development of musical expressiveness and comprehension of differences in style through sonatas and pieces of virtuoso character. Thumb position continued. Etudes: Continued use of studies of comparable difficulty to *Studies* (*Book II*), Schroeder; or *Studies* (*Book II*), Dotzauer. Short pieces of increasing difficulty. Sonatas by Vivaldi, Telemann, Marcello, Eccles (G minor). Concertos of difficulty of Goultermann *No. 4 in G.*

Technic—Scales and arpeggios in three octaves, various bowings and rhythmic patterns. Introduction of scales in thirds and octaves, involving thumb positions.

VIOLONCELLO 7

Development of technical security in all positions. Development of musical insight and conception of varying styles. Continuing development of sight-reading technique. Development of student's independence as far as working-out of new music is concerned. Etudes: Work of difficulty of *Studies,* Books II and III, Schroeder; and *Twenty-one Etudes,* Book I, Duport. *Sonatas* by Brahms (*E minor*), Vivaldi, unaccompanied suite by Bach (G major or D minor) or works of similar difficulty; *Symphonic Variations,* Boellmann; or work of similar difficulty.

Technic—Scales and arpeggios in three octaves. Various bowings and rhythmic patterns. Octaves and thirds in all positions.

VIOLONCELLO 8

Continued development of technical skill through major and minor scales (three and four octaves, various bowings and rhythmic patterns, thirds and octaves, thumb position), arpeggios, and etudes to be chosen from those of Schroeder, Duport, Such, Popper (*High School of Cello Playing, Opus* 73) to suit needs of individual student. *Sonatas* by Beethoven *Opus* 5, Brahms, Vivaldi, Boccherini or other works of comparable difficulty. Bach *Suites* (No. 2 or 3). Concerto or concert-piece by Goltermann, Klengel, d'Albert, Faure *Elegy* or works of similar difficulty.

VIOLONCELLO 9

Continuation of development of technical skill through scales and etudes outlined in Violoncello 8. *Sonatas* by Beethoven (No. 2 and 3). Bach, Boccherini; Solo *Suites* (No. 4 or 5) Bach; *Variations,* Beethoven; or works of similar difficulty. *Concerto* by Lalo, Boccherini, concert-piece by Dohnanyi or works of similar difficulty.

VIOLONCELLO 10

All scales, major and minor, four octaves. Arpeggios, three octaves. Scales in thumb position. Scales and arpeggios in various bowing, rhythmic patterns and fingerings. Etudes by Popper, Dotzauer, Duport, Piatti, Franchomme at discretion of instructor. Representative works from Classic, Romantic, and/or Impressionistic, and Contemporary periods. Concerto to be played should be memorized and of the difficulty of Saint-Saens *Concerto in A Minor.* Sonata from Romantic Period of difficulty of *Sonata in F Major, Brahms.* Other works at discretion of instructor.

STRING BASS — MUSIC 150 SECTION 12

STRING BASS 1

Study material taken from methods and etudes such as *Progressive Method,* Book I, Butler; *Elementary Method,* Rubank; *Modern Method for Double Bass,* N. Watson; *Method for Double Bass,* Zimmerman; *Practical Method for Double Bass,* Flockton. Simple folk tunes in half and first position.

Technic—Holding the instrument; holding the bow (French bow preferred); open string bowing exercises to develop correct position of right hand, fundamentals of tone production, and means of achieving various bowing effects—legato, staccato, spiccato; harmonic tuning; left hand positions; half and first position fingering; major scales and limited arpeggios in half and first positions; care of the bass; care of the bow.

String Bass 2

Technic—Continuation of elementary study material; correction of intonation faults; control of dynamics; simple repairs and adjustments most frequently needed; shifting to 2nd and 3rd positions; additional major scales and introduction of minor scales and arpeggios within the fingering range; additional bowing effects such as louree, tremolo, etc. Easy tunes within limited range.

String Bass 3

Study material: Completion of elementary method (preparatory). Fairly simple tunes up to and including 4th position.

String Bass 4

Moderately easy solo material such as transcriptions of first position cello solos, Schlemueller, W. H. Squire, Popejoy, and others.

Technic—Major and minor scales and arpeggios with various bowing techniques up to and including 5th position; development of the full arm vibrato; further development of tone production, intonation, and shifting in the study of such materials as the *New Method for Double Bass,* Book 1, Simandl, *Tutor;* Langley; *Method for Bass,* Book 2, Butler.

String Bass 5

Study of material from books and methods of the intermediate grade such as *Sixty Six Etudes,* Slama.

Medium easy solo literature such as *Intermezzo,* Vivaldi, and selected works from Zimmerman's transcriptions. Continuation in development of good sound, intonation, musicianship in the intermediate grades.

Technic—Major and minor scales and arpeggios with various bowings and rhythms up to and including 6th position with emphasis on proper use of left hand fingers in shifting between all positions in this range.

String Bass 6

Study material: *Method Book* 1, Simandl; *Double Bass Studies,* Madenski; 30 *Studies for Double Bass,* Moleaux.

Solo literature of medium difficulty such as found in the 34 *String Bass Solos* arranged by Lesinsky.

Technic—Continued drill in proper fingering and shifting between all positions up to and including 7th position; major and minor scales and arpeggios within that range using various bowing techniques with continued emphasis on good tone production, intonation, and an awareness of differences in musical styles.

String Bass 7

Study materials: *Etudes* by Simandl, Hrabe, Storch, and others as well as orchestral literature through such collections of excerpts as those by Reynolds and Strauss. *Bass Methods Book II-III.*

Medium difficult solo literature by Faure, Pergolese, Hindemith; sonata and concerto literature borrowed from easy cello sonatas and student concertos such as *C Major Sonata,* Breval; *Concerto Opus* 17, Grant.

Technic—Major and minor scales and arpeggios through two octaves; continued technique development as set forth in levels 4, 5, and 6 above.

String Bass 8

Study materials selected from intermediate through advanced grades to suit the needs of the individual student.

Solo material selected from available bass literature supplemented with sonata and concerto literature borrowed from moderately difficult to difficult cello works.

Technic—Introduction of thumb position; development of security and precision of fingering in all positions up to and including 7th position.

String Bass 9

Solo material to be selected from advanced works for bass and transcriptions from cello literature at discretion of instructor to lead student to a sensitive expressiveness and an understanding musicianship.

Technic—Further drills and studies in thumb position; completion of major and minor scales and arpeggios in rhythmic and bowing patterns throughout range up to 12th position. Continuation of *Etude* studies and orchestral excerpts.

String Bass 10

Solo material to be selected from advanced to virtuoso levels or repertory available and suited to the needs of the student at the discretion of the instructor.

Technic—Completion of representative materials presented in standard Book II methods to bring student to his highest level of development in use of details of procedure which are essential to expertness of execution, in musicianship, and in performing artistically.

Flute — Music 150 Section 05

Flute 1

Fundamentals of tone production through the second octave; breath control. *Belwin Flute Method,* Vols. 1 and 2, Gekeler.

Technic—Major scales and arpeggios through 3 flats and 3 sharps—quarter notes.

Flute 2

Further refinement of tone production, breath control, embouchure flexibility; increased facility in the highest and lowest registers. *Belwin Flute Method,* Vols. 2 and 3, Gekeler; *Supplementary Studies,* Endresen.

Technic—Major and minor scales and arpeggios through 3 flats and 3 sharps—8th notes.

Flute 3

Increased fullness of tone, flexibility, articulation and execution. *Melodious and Progressive Studies,* Book I, ed. Cavally; Elementary solos, *Concert and Contest Collection,* ed. Voxman.

Technic—Major and harmonic minor scales, major and minor arpeggios—2 octaves; complete chromatic scale—8th notes.

Flute 4

Etudes: *Melodious and Progressive Studies,* Book 1, ed. Cavally; 18 *Exercises,* Berbiguier. Literature: *Twenty-four Short Concert Pieces,* ed. Cavallp; *Concert and Contest Collection,* ed. Voxman.

Technic— Major and harmonic minor scales, major and minor triads—2 octaves, 16 notes.

Flute 5

Etudes: *Melodious and Progressive Studies,* Book 2, ed. Cavally; *Selected Studies,* ed. Voxman; *Grand Exercises Journaliers de Mecanisme,* Taffanel and Gaubert. Literature: *Sonatas,* Loeillet; *Duets,* Kuhlau; *Twenty-four Short Concert Pieces,* ed. Cavally.

Technic—Major and melodic minor scales, chromatic and whole-tone scales, major and minor triads; dominant-7th chords, extended range, varied articulations.

Flute 6

Etudes: 24 *Etudes, Opus* 33, Andersen; 24 *Melodious Studies, Opus* 37, Boehm; 24 *Concert Studies from J. S. Bach,* arr. Schindler; *Grand Exercise Journaliers de Mecanisme,* Taffanel & Gaubert. Literature: *Sonatas,* Handel; Syrinx, Debussy; *Duets,* Kuhlau; *Scherzini,* Andersen; *Serenade,* Hue.

Technic—Scales in continuous patterns; major and minor, augmented triads; dominant-7th and diminished-7th arpeggios.

FLUTE 7

Etudes: *Etudes, Opus* 30, Andersen; 24 *Caprices, Opus* 26, Boehm. Literature: *Sonatas,* Bach and Handel; *Sonatas,* Telemann and Vivaldi; *Suites* and *Concertos,* Telemann and Vivaldi; *Andante in C,* Mozart.

Technic—Scales in thirds and sixths; arpeggios continued at increased speed.

FLUTE 8

Etudes: 24 *Etudes Artistique, Opus* 15, Andersen; 6 *Divertissements, Opus* 68, Kuhlau. Literature: *Sonatas,* Bach; *Concertos in G and D,* Mozart; *Piece for Flute Alone,* Ibert; *Nocturne et Allegro Scherzando,* Gaubert; *Airs de Ballet from "Ascanio,"* Saint-Saens (Taffanel). Orchestral studies.

Technic—"Daily Scale and Arpeggio Routine"—Major scale, I triad, I 7th, diminished-7th on raised I, II 7th, V 7th, 2-octave chromatic scale on I, relative minor scale, minor I triad, minor V 7th.

FLUTE 9

Etudes: *Etudes et Exercises Techniques,* Moyse; *De la Sonorite,* Moyse; *Etudes, Opus* 63, Andersen. Literature: *Sonata,* Hindemith; *Night Soliloquy,* Kennan; *Fantasie,* Faure; modern solo material. Orchestral studies.

FLUTE 10

Etudes: *Virtuoso Studies, Opus* 60, Andersen; 30 *Caprices, Opus* 107, Karg-Elert; studies from the works of Moyse. Literature: *Poem,* Griffes; *Sonata,* Piston; *Sonata,* Prokofieff; other works from the modern repertoire.

OBOE — MUSIC 150 SECTION 07

OBOE 1

Studies: Gekeler, *Oboe Method,* Books I and II.

Solos: Franck, *Piece V.*

Technic—Elements of correct embouchure, tone production, breath support, articulation. Long tones, production of dynamics.

OBOE 2

Studies: Gekeler, *Oboe Method,* Book II.

Solos: Faure, *Piece.*

Technic—Refinement of tone, work on constant flow of tone, extension of range. Major scales quarter notes: to 6♯, 6b.

OBOE 3

Studies: Barret, *Complete Oboe Method* (Progressive Studies); Bleuzet, *Technique of the Oboe,* Vol. I.

Solos: Barlow, *Winters Passed.*

Technic—Extension of range, increased flexibility and velocity, further work on tone coloring, articulations. Major and minor scales in pattern form: to 3♯, 3b. Reed making.

OBOE 4

Studies: Barret, *Progressive Studies;* Bleuzet, *Technique of the Oboe,* Vol. 1.

Solos: Schumann, *Three Romances.*

Technic—Continuation of range extension, increase of flexibility and velocity, tone coloring, articulations. Reed making. Major and minor scales in pattern form: to 6♯, 6b.

OBOE 5

Studies: Barret, *Complete Oboe Method* (Sonatas); Bleuzet, *Technique of the Oboe,* Vol. I.

Solos: Handel, *Sonatas* ♯1 *and* 2.

Technic—Continuation of flexibility and velocity, varied articulations. Major and minor scales in pattern form, I triad, V7 arpeggio.

OBOE 6

Studies: Barret, *Sonatas;* Bleuzet, *Technique of the Oboe,* Vol. I.
Solos: Hindemith, *Sonata.*
Technic—Flexibility and velocity, varied articulations. Major and minor scales. I triad, V7 arpeggio.

OBOE 7

Studies: Ferling, 48 *Etudes;* Bleuzet, *Technique of the Oboe,* Vol. II.
Solos: Handel, *Concerto in G Minor.*
Technic—Advanced technique. Major and minor scales in thirds and fourths, all articulations.

OBOE 8

Studies: Ferling, 48 *Etudes;* Bleuzet, *Technique of the Oboe,* Vol. II.
Solos: Marcello, *Concerto.*
Technic—Continuation of advanced technique. Major and minor scales in thirds and fourths, all articulations.

OBOE 9

Studies: Bleuzet, *Technique of the Oboe,* Vols. I, II, III; Andraud, *Vade Mecum.*
Solos: Mozart, *Concerto in C Major.*
Technic—Basic review of previous levels, all techniques, scales, intervals, arpeggios. Orchestral studies.

OBOE 10

Studies: Bleuzet, *Technique of the Oboe,* Vols. I, II, III; Andraud, *Vade Mecum.*
Solos: Goosens, *Concerto.*
Technic—Specialized technique. All techniques, scales, intervals, arpeggios. Orchestral studies.

CLARINET — MUSIC 150 SECTION 04

CLARINET 1

Fundamentals of tone production, concentrated on the Chalumeau register. *Study of the Clarinet,* Stubbins (Chalumeau register).
Technic—Major scales, major arpeggios, chromatic scale within the Chalumeau register—quarter notes.

CLARINET 2

Further refinement of tone production and articulation, including the Clarion register. *Study of the Clarinet* (Clarion register, duets, Stubbins' Etudes), Stubbins.
Technic—Major and harmonic minor scales, major and minor arpeggios, chromatic scale—2 octaves, quarter notes.

CLARINET 3

Increased flexibility and refinement of tone production and articulation throughout the complete practical range. *Study of the Clarinet* (Altissimo register; more difficult duets and Stubbins' Etudes), Stubbins; cantabile studies from Rose, *Thirty-two Studies.*
Technic—Major and harmonic minor scales, major and minor arpeggios—2 octaves; complete chromatic scale—8th notes.

CLARINET 4

Etudes: Studies in tone and phrasing from *Thirty-two Studies,* Rose. Literature: *Concert and Contest Collection,* Voxman; *Ballade,* Gade; *Romance,* Becker; *Chanson,* Gliere.
Technic—Major and harmonic minor scales, major and minor triads—2 octaves, 16th notes.

CLARINET 5

Etudes: Studies in articulation and execution from *Thirty-two Studies,* Rose. Literature: *Concert and Contest Collection,* Voxman: *Scherzo,* Koepke; *Adagio from Concerto,* K. 622, Mozart, *Fantasy-Piece, No.* 1, Schumann,

Technic—Major and melodic minor scales, chromatic and whole-tone scales, major and minor triads, dominant-seventh chords—extended range, varied articulations.

CLARINET 6

Etudes: *Forty Studies*, Book 1, Rose; *Method for Clarinet*, Part 3A (*Virtuoso Studies*), Langenus; Literature: *Promenade*, Delmas; *Allegretto grazioso* from *Sonata No. 1*, *Allegro appassionata* from *Sonata No. 2*, Brahms; *Canzonetta, Opus 19*, Pierne; *Sonatine*, Weinberger.

Technic—Scales in continuous patterns; major, minor, augmented triads, dominant 7th and diminished 7th arpeggios.

CLARINET 7

Etudes: *Forty Studies*, Book 2, Rose; 24 *Studies in All Keys*, Stark; *Bach for the Clarinet*, Part 2 (ed. Simon). Literature: *Fantasia and Rondo*, Weber; *Sonata*, Mendelssohn; *Five Bagatelles*, Finzi; *Lyrical Piece*, Barlow; *Sonata*, Hindemith.

Technic—Scales in thirds and sixths; arpeggios continued at increased speed.

CLARINET 8

Etudes: *Twenty Studies after Rode*, Rose; *Twenty-five Etudes de Technique*, Jeanpean; *Thirty Studies after Bach, Handel, Dont*, etc., Perier. Literature: *Concertino*, Weber; *Sonata in E flat*, Opus 167, Saint-Saens; *Andante et Scherzo*, Pierne; *Duo Concertante*, Weber.

Technic—"Daily Scale and Arpeggio Routine"—Major scale, I triad, I 7th, diminished—7th on raised I, II 7th, V 7th, 2-octave chromatic scale on I, relative minor scale, minor I triad, minor V 7th.

CLARINET 9

Etudes: 18 *Etudes de Perfectionnement*, Jeanjean; *Twenty-two Studies in the Modern Style*, Perier. Literature: *Concerto* K. 622, Mozart; *Three Fantasy-Pieces*, Opus 73, Schumann; *Three Pieces for Clarinet Solo*, Stravinsky. Orchestra studies: Mozart, Beethoven, Weber, Mendelssohn, Schumann, Berlioz.

CLARINET 10

Etudes: *Sixteen Studies in the Modern Style*, Jeanjean; *Twenty-two Studies in the Modern Style*, Perier. Literature: *Sonatas*, Brahms; *Premiere Rhapsody*, Debussy; *Cantegril*, Opus 72, Busser; *Duo concertante*, Milhaud. Orchestra studies: Wagner, Strauss, Rimsky-Korsakoff, 20th-century works.

BASSOON — MUSIC 150 SECTION 02

BASSOON 1

Studies: Weissenborn, *Bassoon Studies* (Ambrosio ed.). Book I.

Technic—Correct embouchure, tone production, breath support, articulation. Long tones, production of dynamics. Beginning of scale studies: major and minor to 3♯, 3b.

BASSOON 2

Studies: Weissenborn, *Bassoon Studies* (Ambrosio ed.). Book I.

Solos: Weissenborn, *Song Without Words*.

Technic—Refinement of tone production and control, varied articulation. Long tones, extension of range. Continuation of scales studies; major and minor to 6♯, 6b.

BASSOON 3

Studies: Weissenborn, *Bassoon Studies*, Book II; Jancourt, 38 *Progressive Exercises;* Oubradous, *Daily Scales and Exercises*, Book I.

Solos: Galliard, *Six Sonatas*.

Technic—Increased range, elementary studies in rhythm and articulation, exercises in tenor clef. Reed making. Major and minor scales to 3♯, 3b, I triad.

BASSOON 4

Studies: Weissenborn, *Bassoon Studies*, Book II; Jancourt, 38 *Progressive Exercises;* Oubradous, *Daily Scales and Exercises*, Book I.

Solos: Pierne, *Solo de Concert;* Galliard, *Six Sonatas.*
Technic—Continued increase of range, exercises in rhythm and articulation, tenor clef study. Reed making. Major and minor scales to 6#, 6b, I triad.

Bassoon 5

Studies: Jancourt, 26 *Melodic Studies;* Oubradous, *Daily Scales and Exercises,* Book II.
Solos: Telemann, *Sonata in F Minor;* Hindemith, *Sonata.*
Technic—Increased velocity and flexibility, increased range, varied articulation. Major and minor scales in thirds and fourths, I triad, V7 arpeggio: to 3#, 3b.

Bassoon 6

Studies: Jancourt, 26 *Melodic Studies;* Oubradous, *Daily Scales and Exercises,* Book II.
Solos: von Weber, *Concerto in F Major;* Vivaldi, *Concerto in Bb* (La Notte).
Technic—Continuation of velocity and flexibility studies, varied articulation, increase or range. Major and minor scales, in thirds and fourths, I triad, V7 arpeggio: to 6#, 6b.

Bassoon 7

Studies: Milde, 25 *Studies in All Keys;* Milde, *Concert Studies,* Book I or Orefici, *Studi Melodici.*
Solos: Mozart, *Concerto,* K. 191; Phillips, *Concert Piece.*
Technic—Advanced technique. Scales and arpeggios in all keys.

Bassoon 8

Studies: Milde, 25 *Studies in All Keys;* Milde, *Concert Studies,* Book I, or Orefici, *Studi Melodici.*
Solos: Bach, *Cello Suites;* Vivaldi, *Concerto in A Minor,* F.VII, n.2.
Technic—Advanced technique. Scales and arpeggios in all keys.

Bassoon 9

Studies: Milde, *Concert Studies,* Book II; Piard, *Scale Studies,* Book I.
Solos: Kohs, *Sonatina;* Vivaldi, *Concerto in A Minor,* F.VII, n.7.
Technic—Basic review of previous levels. Scale studies in all keys. Orchestral studies.

Bassoon 10

Studies: Milde, *Concert Studies,* Book II; Piard, *Scale Studies,* Book I.
Solos: Jacob, *Concerto;* Bozza, *Concertino.*
Technic—Study and analysis of different styles of execution relative to various composers. Scales in all keys. Orchestral studies.

Saxophone — Music 150 Section 11

Saxophone 1

Studies: Klose-Gay, *Methods Complete pour Saxophone.*
Solos: Moyse, 40 *Little Pieces in Progressive Order.*
Technic—Correct embouchure, tone production, breath support, articulation. Long tones, production of dynamics. Beginning of scale studies: major and minor to 3#, 3b.

Saxophone 2

Studies: Klose-Gay, *Methods Complete pour Saxophone;* Mule, 24 *Easy Studies After Samie.*
Solos: Moyse, 40 *Little Pieces in Progressive Order.*
Technic—Refinement of tone production and control, varied articulation. Long tones, extension of range. Scales studies: major and minor to 6#, 6b.

Saxophone 3

Studies: Blemant, 20 *Melodic Studies,* Book I; Mule, 24 *Easy Studies after Samie.*

Solos: Gretchaninoff, *Two Miniatures;* Martini, *Gavotte.*

Technic—Extension of range, increased flexibility and velocity, continued articulation study, controlled dynamics. Major and minor scales, 8th notes, varied articulation. I triad: to 3#, 3b.

SAXOPHONE 4

Studies: Blemant, 20 *Melodic Studies,* Book I; Busser, 12 *Melodic Etudes.*

Solos: Gershwin, *Prelude #2;* Bozza, *Aria;* Franck, *Piece* II.

Technic—Continuation of flexibility and velocity, articulation, dynamics. Major and minor scales, 8th notes, I triad: to 6#, 6b.

SAXOPHONE 5

Studies: Mule, 18 *Studies After Berbiguier.*

Solos: Lantier, *Sicilienne;* Milhaud, *Danse.*

Technic—Continuation of flexibility and velocity, vibrato study, varied articulation. Major and minor scales, 16th notes, I triad, V7 arpeggio, varied articulation: ti 3#, 3b.

SAXOPHONE 6

Studies: Mule, 18 *Studies After Berbiguier.*

Solos: Ibert, *Aria;* Eccles, *Sonata.*

Technic—Flexibility and velocity study, vibrato study, articulation. Major and minor scales, 16th notes, I triad, V7 arpeggio: to 6#, 6b.

SAXOPHONE 7

Studies: Mule, *Scale Studies,* Book I; Mule, *Daily Studies After Terschak;* Mule, 48 *Studies After Ferling.*

Solos: Heiden, *Sonata;* Rameau, *Rigaudon.*

Technic—Advanced technique. Scales, I triad, V7 arpeggio, in all keys.

SAXOPHONE 8

Studies: Mule, *Scale Studies,* Book I; Mule, *Daily Studies After Terschak;* Mule, 48 *Studies After Ferling.*

Solos: Creston, *Sonata;* Schmitt, *Legende.*

Technic—Advanced technique. Scales, I triad, V7 arpeggio, in all keys.

SAXOPHONE 9

Studies: Mule, 52 *Studies After Boehm, Terschak, and Furstenau;* Mule, 30 *Studies After Soussman;* Viola, *Saxophone Method.*

Silos: Glazounov-Petiot, *Concerto;* Creston, *Concerto.*

Technic—Specialized technique. Basic review of previous levels.

SAXOPHONE 10

Studies: Mule, 52 *Studies After Boehm, Terschak, and Furstenau;* Mule 30 *Studies After Soussman;* Viola, *Saxophone Method.*

Solos: Ibert, *Concerto da Camera;* Tcherepnine, *Sonatine Sportiv;* Bonneau, *Caprice en Forme de Valse.*

Technic—Specialized technique. Study and analysis of different styles of execution relative to various composers.

FRENCH HORN — MUSIC 150 SECTION 06

FRENCH HORN 1

Fundamentals of French Horn playing; tone production, proper attack, breath control, formation of embouchure, holding the horn.

Typical material—Studies: J. Kinyon, *Breeze-Easy Method,* Vol. 1 and 2; Pottag-Hovey, *Method,* Book 1; J. Skornicka, *Elementary Method;* Marvin Howe, *Method.*

Solos: J. Kinyon, *Breeze-Easy Recital Pieces;* J. Arnold (ed.), *Easy Horn Solos.*

Technic—Major scales in G, C, F, B flat, E flat, A flat, and D flat (concert), one octave, in quarter notes, M.M. quarter note = 72.

FRENCH HORN 2

Further development of fundamentals as outlined in French Horn 1.

Typical material—Studies: Horner, *Primary Studies;* J. Skornicka, *Intermediate Method;* Pottag-Hovey, *Method,* Book 2; continuation of Marvin Howe, *Method.*

Solos: J. Arnold (ed.), *Elementary Horn Solos;* E. Vuillermoz (ed.) *Classics for the Horn.*

Technic—All major scales and arpeggios, one octave, in eighth notes, M.M. quarter note = 72.

French Horn 3

Begin E flat transposition. Continue work on tone production, technique and extension of range. Work on mechanical and hand muting and reading in bass clef.

Typical material—Studies: Schantl-Pottag, *Preparatory Melodies to Solo Playing;* H. Voxman, *Advanced Method,* Vol. 1 and 2.

Solos: Mason Jones (ed.), *Solos for the Horn Player;* R. Gipps, *Sonatina;* E. Szervansky, *Kis Szvit* (Little Suite).

Technic—All major scales and straight arpeggios, one or two octaves, in eighth notes and in eighth note triplets, M.M. quarter note = 72.

French Horn 4

Begin E transposition. Continuation of French Horn 3.

Typical material—Studies: Schantl-Pottag, *Preparatory Melodies to Solo Playing;* C. Kopprasch, 60 *Studies,* Book 1; E. Gates, *Odd-Meter Etudes.*

Solos: F. Danzi, *Sonata in E flat,* op. 28; F. Rosetti, *Concerto in d minor;* W. Mozart, *Concerto No.* 3.

Technic—All major and minor scales and straight arpeggios, one and two octaves, in simple and compound rhythm patterns, M.M. quarter note = 72.

French Horn 5

A review of all the fundamentals of horn playing. Work on double tonguing and lip trills. Begin D and G transposition.

Typical material—Studies: Maxime-Alphonse, 200 *Studies,* Book 1; C. Kopprasch, 60 *Studies,* Book 2; J. F. Gallay, 28 *Studies,* op. 13; Pottag-Andraud, *Selected Melodious, Progressive and Technical Studies,* Book 1.

Solos: F. Akemenko, *Melody;* R. Gliere, *Intermezzo;* A. Scriabin, *Romance;* W. Mozart, *Concerto No.* 1.

Technic—All major and minor scales, the same as French Horn 4, plus in diatonic pattern, all at M.M. quarter note = 72.

French Horn 6

Add C transposition. Begin work on triple tonguing. Begin study of orchestral literature.

Typical material—Studies: Maxime-Alphonse, 200 *Studies,* Book 2; Pottag-Andraud, *Selected Melodious, Progressive and Technical Studies,* Book 2; J. F. Gallay, 12 *Studies,* op. 57.

Solos: E. Chabrier, *Larghetto;* R. Gliere, *Nocturnes;* W. Mozart, *Concerto No.* 2.

Technic—Scales as in French Horn 5 with increased speeds, plus quintuplet grouping. Arpeggios as in French Horn 4, plus augmented, dominant seventh and diminished seventh.

French Horn 7

Transposition in D flat. Continuation of study of orchestral literature. Emphasis on solo literature. Study of methods and materials used in private horn instruction.

Typical material—Studies: Maxime-Alphonse, 200 *Etudes,* Book 3.

Solos: A. Glazounov, *Reverie;* W. Mozart, *Concerti No.* 4; W. Mozart, *Concert Rondo;* A. Cooke, *Rondo.*

Technic—Same as in French Horn 6 with increased speeds.

French Horn 8

Transposition in B natural and B flat. Continuation of French Horn 7.

Typical material—Studies: Maxime-Alphonse, 200 *Etudes,* Book 4; J. F. Gallay, 39 *Preludes,* op. 27.

Solos: F. J. Haydn, *Concerto No.* 2; B. Heiden, *Sonata;* H. Busser, *Concert Piece.*

Technic—Same as in French Horn 7 with increased speeds.

FRENCH HORN 9

Transposition in A flat and A. Comprehensive study of solo literature and orchestral horn solos.

Typical material—Studies: Maxime-Alphonse, 200 *Etudes*, Book 5; J. F. Gallay, 12 *Grand Caprices*.

Solos: P. Dukas, *Villanelle;* L. Beethoven, *Sonata;* Saint-Saens, *Morceau de Concert*.

Technic—Same as in French Horn 8 with increased speeds.

FRENCH HORN 10

All transpositions. A coverage of all types of styles and techniques used in solo, orchestral and chamber music. Memorization of standard orchestral excerpts and selected recital pieces.

Typical material—Studies: Maxime-Alphonse, 200 *Etudes*, Book 6; J. F. Gallay, *Grandes Etudes Brillantes*, op. 43

Solos: R. Schumann, *Adagio and Allegro;* P. Hindemith, *Sonata;* F. Haydn, *Concerto No.* 1; R. Strauss, *Concertos*.

Technic—Same as in French Horn 9 with increased speeds.

TRUMPET — MUSIC 150 SECTION 14

TRUMPET 1

Fundamentals of tone production, attack, breath control, embouchure formation.

Typical material—Studies: Edwards-Hovey, *Method*, Book 1; S. Hering, *The Beginning Trumpeter;* J. Kinyon, *Breeze Easy Method*, Books 1 and 2.

Solos: J. Kinyon, *Breeze Easy Recital Pieces;* Klein, *Lament;* S. Lawton, *The Young Trumpet Player*—Vol. 1.

Technic—Major scales in G, C, F, B flat, E flat, A flat, and D flat (Concert), one octave in quarter notes, M.M. quarter = 72.

TRUMPET 2

Continued emphasis upon fundamentals.

Typical material—Studies: Edwards-Hovey, *Method*, Book 2; R. Getchell, *Practical Studies;* S. Hering, 40 *Progressive Etudes*.

Solos: C. Debussy, *Mandoline;* B. Fitzgerald, *Aria and Allegro;* Job, 30 *Classical Airs*.

Technic—All major scales and arpeggios, one octave, in eighth notes, M.M. quarter = 72.

TRUMPET 3

Further development of tone, technique, range, flexibility, and articulation.

Typical material—Studies: D. Reinhart, *Concone Studies;* S. Hering, 32 *Etudes*.

Solos: F. Baines, *Pastorale;* B. Fitzgerald, *English Suite*.

Technic—All major scales and straight arpeggios, one or two octaves, in eighth notes and in eighth note triplets, M.M. quarter note = 72.

TRUMPET 4

Continued refinements of concepts in Level 3. Work on double and triple tonguing.

Typical material—Studies: H. Clark, *Technical Studies;* Duhem, 24 *Etudes*; E. Gates, *Odd Meter Etudes*.

Solos: C. Bond, *Cincerto;* A. Petit, *Etude de Concours;* W. Eckard, 12 *Program Solos*.

Technic—All major and minor scales and straight arpeggios, one or two octaves, in simple and compound rhythm patterns, M.M. quarter note = 72.

TRUMPET 5

A review of all the fundamentals of trumpet playing. Introduction to C, D, and A transpositions.

Typical material—Studies: E. Goldman, *Practical Studies;* Sachse, 100 *Etudes;* M. Schlossberg, *Daily Drills;* H. Voxman, Selected Studies.

Solos: A. Corelli, *Sonata* 8; Fitzgerald, *Modern Suite;* A. Goedicke, *Concert Etude.*

Technic—All major and minor scales, same as level 4, plus in diatonic pattern, all at M.M. quarter note = 84. Major and minor arpeggios in straight and broken form at M.M. quarter note = 72.

TRUMPET 6

Further development of range and flexibility. Addition of A flat, E flat, B, and F transpositions. Work on improvisation.

Typical material—Studies: J. Arban, *Characteristic Studies;* Gisondi, *Bach for the Trumpet;* R. Laurent, *Etudes Pratiques,* Vol. 1 and 2.

Solos: E. Bozza, *Badinage;* W. Hartley, *Sonatina;* Webber, *Suite in F Major.*

Technic—Scales as in Level 5 with increased speeds, plus quintuplet grouping. Arpeggios as in Level 5, plus augmented, dominant seventh, and diminished seventh.

TRUMPET 7

Addition of G and E transpositions.

Typical material—Studies: V. Brandt, 34 *Studies;* H. Glantz, 48 *Studies;* R. Laurent, *Etudes Pratiques,* Vol. 3.

Solos: J. Haydn, *Concerto;* W. Latham, *Suite.*

Technic—Same as in Trumpet 6 with increased speeds.

TRUMPET 8

Study of the C trumpet. Added emphasis upon orchestral literature.

Typical material—Studies: G. Bartold, *Orchestral Excerpts,* Books 1, 2, 3; T. Charlier, 36 *Etudes;* R. Sabarich, 10 *Etudes.*

Solos: J. Hummel, *Concerto;* K. Riisager, *Concertino.*

Technic—Same as level 7 with increased speeds.

TRUMPET 9

Continued stress of orchestral and solo repertoire.

Typical material—Studies: G. Bartold, *Orchestral Excerpts,* Books 4 and 5; V. Brandt, *Last Etudes;* M. Broiles, *Studies and Duets,* Vol. 2.

Solos: P. Hindemith, *Sonata;* K. Kennan, *Sonata.*

Technic—Same as Level 8 with increased speeds.

TRUMPET 10

Review of all techniques and styles for solo, orchestral, and ensemble playing. Memorization of standard orchestral excerpts and selected recital pieces.

Typical material—Studies: M. Bitsch, 20 *Etudes;* C. Chaynes, 15 *Etudes;* Rossbach, *Strauss Orchestral Excerpts;* Hoehne, *Wagner Orchestral Excerpts,* Vol. 1 and 2.

Solos: Wal-Berg, *Concerto;* J. Addison, *Concerto;* G. Enesco, *Legend.*

Technic—Same as Level 9 with increased speeds.

TROMBONE — MUSIC 150 SECTION 13

TROMBONE 1

Fundamentals of tone production, embouchure development, breath support and attack.

Typical material—Studies: W. Beeler, *Method,* Book 1; Cimera-Hovey, *Elementary Method;* J. Kinyon, *Breeze-Easy Method,* Vol. 1 and 2.

Solos: J. Kinyon, *Breeze-Easy Recital Pieces;* J. Arnold (ed.), *Easy Trombone Solos.*

Technic—Major scales in G, C, F, B flat, E flat, A flat and D flat, one octave, in quarter notes, M.M. quarter note = 72.

TROMBONE 2

Work in legato style. Continued development of fundamentals.

Typical material—Studies: W. Beeler, *Method,* Book 2; Skornicka and Boltz, *Intermediate Method;* R. Clarke, *Method.*

Solos: G. Mullins (ed.), *Twelve Easy Classics;* J. Arnold (ed.), *Elementary Trombone Solos.*

Technic—All major scales and arpeggios, one octave in eighth notes, M.M. quarter note = 72.

TROMBONE 3

Studies in tone control, breathing, flexibility and articulation.

Typical material—Studies: R. Fink, *Melodic Studies;* A. Slama, 66 *Etudes in All Keys;* H. Voxman, *Advanced Method,* Vol. 1 and 2.

Solos: *Canzonetta,* G. Pergolesi; G. Cords, *Romanza;* E. Paudert, *Fantasie Marziale.*

Technic—All major scales and straight arpeggios, one or two octaves, in eighth notes and in eighth note triplets, M.M. quarter note = 72.

TROMBONE 4

Further development of range, tone control, breathing, flexibility and articulation. Work on double and triple tonguing. Introduction of tenor clef.

Typical material—Studies: R. Fink, *Introduction to the Tenor Clef;* J. Rochut, *Melodious Etudes,* Vol. 1; continuation of A. Slama, 66 *Etudes.*

Solos: F. J. Haydn, *Adagio;* J. Galliard, 6 *Sonatas for Bassoon;* A. Guilmant, *Morceau Symphonique;* H. Berlioz, *Recitative and Prayer;* Croce-Spinelli, *Solo de Concours.*

Technic—All major and minor scales and straight arpeggios, one or two octaves, in simple and compound rhythm patterns, M.M. quarter note = 72.

TROMBONE 5

A review of all the fundamentals of trombone playing. Advanced flexibility exercises. Introduction of B flat treble clef transposition.

Typical material—Studies: E. Gates, *Odd Meter Etudes for All Instruments in Treble Clef;* O. Blume, 36 *Studies;* continuation of J. Rochut, *Melodious Etudes,* Vol. 1; H. Voxman, *Selected Studies;* B. Gregoriev, 78 *Studies.*

Solos: J. E. Barat, *Andante and Allegro;* V. Blazhevich, *Concert Piece Number* 5; A. Vivaldi, *Sonatas* for 'Cello.

Technic—All major and minor scales, same as Level 4, plus in diatonic pattern, all at M.M. quarter note = 84. Major and minor arpeggios in straight and broken form at M.M. quarter note = 72.

TROMBONE 6

Work in improvisation. Introduction of alto clef. Further development of range and flexibility.

Typical material—Studies: R. Mueller, *School for the Trombone,* Vol. 3; C. Kopprasch, 60 *Studies;* J. Richut, *Melodious Etudes,* Vol. 2; V. Blazhevich, *Clef Studies;* C. Colin, *Progressive Technique;* A. LaFosse, *School of Sight Reading and Style,* Book 1.

Solos: G. F. Handel, *Concerto;* Saint-Saens, *Cavatine;* A. Corelli, *Sonatas* for 'Cello.

Technic—Scales as in Level 5 with increased speeds, plus quintuplet grouping. Arpeggios as in Level 5, plus augmented, dominant seventh and diminished seventh.

TROMBONE 7

A study of the more advanced material with emphasis on recital literature. Introduction to the bass trombone.

Typical material—Studies: O. Blume (R. Fink), 36 *Studies for Trombone with "F" Attachment;* K. Kahila, *Advanced Studies;* continuation of V. Blazhevich, *Clef Studies;* continuation of J. Rochut, *Melodious Etudes,* Vol. 2; continuation of A. LaFosse, *School of Sight Reading and Style.*

Solos: P. Vidal, *Second Concert Piece;* P. McCarty, *Sonatina for Bass Trombone;* R. Sanders, *Sonata in E Flat;* L. Bernstein, *Elegy for Mippy II.*

Technic—Same as in Trombone 6 with increased speeds.

TROMBONE 8

Further emphasis on clef reading and solos. Begin study of the standard orchestral repertoire.

Typical material—Studies: A. Ostrander (ed.), *Orchestra Passages for Trombone;* V. Blazhevich, 26 *Sequences;* A. LaFosse, *Method,* Book 2; A. Schroeder, 170 *Studies for 'Cello;* A. LaFosse, *School of Sight Reading and Style.*

Solos: S. Stojowski, *Fantaisie;* P. Gaubert, *Morceau Symphonique;* G. F. McKay, *Sonata;* G. Jacobs, *Concerto.*

Technic—Same as in Trombone 7 with increased speeds.

Trombone 9

Comprehensive study of Bach's *Unaccompanied 'Cello Suites.* Further emphasis on orchestral excerpts.

Typical material—Studies: Hansman (ed.), *R. Wagner Orchestral Studies;* Berthold (ed.), *R. Strauss, Orchestral Studies;* Flandrin, *Method,* Book 2.

Solos: J. Castérède, *Sonatine;* P. Hindemith, *Sonata;* C. Salzedo, *Piece Coscertante;* Jenö Takacs, *Sonata.*

Technic—Same as in Trombone 8 with increased speeds.

Trombone 10

A coverage of all types of styles and techniques used for solo, orchestral and ensemble playing. Memorization of standard orchestral excerpts and selected recital pieces.

Typical material—Studies: Continuation of J. S. Bach, *Six Suites for Unaccompanied Violoncello;* continuation of Flandrin, *Method,* Book 2, further study of LaFosse (ed.), *Orchestral Excerpts;* V. Blazhevich, *Concert Duets;* R. Borden, 12 *Serial Duets for Trumpet and Trombone.*

Solos: W. Hartley, *Sonata Concertante;* B. Childs, *Sonata;* K. G. Roy, *Sonata;* D. Milhaud, *Concertino D'Hiver.*

Technic—Same as in Trombone 9 with increased speeds.

Baritone Horn — Music 150 Section 01

Baritone Horn 1

Fundamentals of tone production, embouchure formation, breath support and attack.

Typical material—Studies: J. Kinyon, *Breeze-Easy Method,* Book 1 and 2; Cimera-Hovey or Edwards-Hovey, *Method,* Vol. 1; W. Beeler, *Method,* Vol. 1.

Solos: J. Arnold (ed.), *Easy Solos;* J. Kinyon, *Breeze-Easy Recital Pieces.*

Technic—Major scales in G, C, F, B flat, E flat, A flat and D flat (concert), one octave, in quarter notes, M.M. quarter note = 72.

Baritone Horn 2

Continued emphasis on fundamentals and development of lip-slurring and dynamic control.

Typical material—Studies: J. Skornicka, *Intermediate Method;* S. Hering, 40 *Progressive Etudes;* W. Beeler, *Method,* Vol. 2; Edwards-Hovey, *Method,* Book 2.

Solos: J. Arnold (ed.), *Elementary Solos;* G. Mullins, *Twelve Easy Classics;* B. Fitzgerald, *Aria and Allegro.*

Technic—All major scales and arpeggios, one octave, in eighth notes, M.M. quarter note = 72.

Baritone Horn 3

Studies in tone control, breathing, flexibility and articulation.

Typical material—Studies: S. Hering, 32 *Etudes;* R. Fink, *Melodic Studies;* H. Voxman, *Advanced Method,* Vol. 1 and 2; A. Slama, 66 *Etudes in All Keys.*

Solos: G. Pergolesi, *Canzonetta;* G. Cords, *Romanza;* E. Paudert, *Fantasie Marziale;* W. Eckard (ed.), 12 *Program Solos.*

Technic—All major scales and straight arpeggios, one or two octaves, in eighth notes and in eighth note triplets, M.M. quarter note = 72.

Baritone Horn 4

Further development of range, tone control, breathing, flexibility and articulation. Work on double and triple tonguing. Development of clef reading.

Typical material—Studies: continuation of A. Slama, 66 *Etudes;* J. Rochut, *Melodious Etudes,* Vol 1; Gates, *Odd Meter Etudes;* H. Clarke, *Technical Studies;* Duhem, 24 *Etudes.*

Solos: J. Galliard, *Sonatas for Bassoon;* A. Guilmant, *Morceau Symphonique;* B. Fitzgerald (ed.), *English Suite.*

Technic—All major and minor scales and straight arpeggios, one and two octaves, in simple and compound rhythm patterns, M.M. quarter note = 72.

Baritone Horn 5

A review of all the fundamentals of baritone playing. Advanced flexibility exercises.

Typical material—Studies: Continuation of J. Rochut, *Melodious Etudes,* Vol. 1; O. Blume, 36 *Studies;* H. Voxman, *Selected Studies;* Sachse, 100 *Etudes.*

Solos: J. Barat, *Andante and Allegro;* A. Vivaldi, *Sonatas for 'Cello;* B. Fitzgerald, *Modern Suite;* A. Goedicke, *Concert Etude.*

Technic—All major and minor scales, the same as Baritone 4, plus in diatonic pattern, all at M.M. quarter note = 84. Major and minor arpeggios in straight and broken form at M.M. quarter note = 72.

Baritone Horn 6

Work in improvisation. Further development of range and flexibility.

Typical material—Studies: C. Kopprasch, 60 *Studies;* J. Rochut, *Melodious Etudes,* Vol. 2; C. Colin, *Progressive Technique;* A. Laurent, *Etudes Pratiques,* Vol. 1 and 2.

Solos: W. Hartley, *Sonatina;* G. F. Handel, *Concerto;* A. Corelli, *Sonatas for 'Cello;* E. Bozza, *Badinage.*

Technic—Scales as in Baritone 5 with increased speeds, plus quintuplet grouping. Arpeggios as in Baritone 5, plus augmented, dominant seventh and diminished seventh.

Baritone Horn 7

A study of the more advanced material with emphasis on recital literature.

Typical material—Studies: Continuation of J. Rochut, *Melodious Etudes,* Vol. 2; K. Kahlia, *Advanced Studies;* H. Glantz, 48 *Studies;* R. Laurent, *Etudes Pratiques,* Book 3.

Solos: P. Vidal, *2nd Concert Piece;* R. Sanders, *Sonata in E flat;* W. Latham, *Suite.*

Technic—Same as in Baritone 6 with increased speeds.

Baritone Horn 8

Velocity studies and further development of solo style.

Typical material—Studies: T. Charlier, 36 *Etudes;* R. Sabarich, *Dix Etudes;* V. Blazhevich, 26 *Sequences.*

Solos: S. Stojowski, *Fantaisie;* P. Gaubert, *Morceau Symphonique;* G. F. McKay, *Sonata;* K. Riisager, *Concertino.*

Technic—Same as in Baritone 7 with increased speeds.

Baritone Horn 9

Comprehensive study of Bach's *Unaccompanied 'Cello Suites.* Study of the standard orchestral repertoire.

Typical material—Studies: Berthold (ed.), R. Strauss, *Orchestral Studies;* Flandrin, *Method,* Part 2; M. Broiles, *Studies and Duets,* Vol. 2.

Solos: P. Hindemith, *Sonata for Trombone;* J. Castérède, *Sonatine;* C. Salzedo, *Piece Concertante;* K. Kennan, *Sonata.*

Technic—Same as in Baritone 8 with increased speeds.

Baritone Horn 10

A coverage of all types of styles and techniques used for solo, orchestral and ensemble playing. Memorization of standard orchestral excerpts and selected recital pieces.

Typical material—Studies: *Orchestral Excerpts;* continuation of J. S. Bach, *Unaccompanied 'Cello Suites;* continuation of Flandrin, *Method,* Part 2; V. Blazhevich, *Concert Duets;* M. Bitsch, 20 *Etudes.*

Solos: B. Childs, *Sonata for Unaccompanied Trombone;* W. Hartley, *Sonata Concertante;* K. G. Roy, *Sonata;* G. Enesco, *Legend.*

Technic—Same as in Baritone 9 with increased speeds.

Tuba — Music 150 Section 15

Tuba 1

Fundamentals of tone production, breath support and embouchure formation.

Typical material—Studies: W. Beeler, *Method,* Book 1; Cimera-Kuhn, *Method,* Book 1; M. Hinsley, *Basic Method.*

Solos: J. Kinyon (ed.), *Breeze-Easy Recital Pieces.*

Technic—Major scales in G, C, F, B flat, E flat, A flat, and D flat, one octave, in quarter notes, M.M. quarter note = 72.

Tuba 2

Continued emphasis on fundamentals and development of lip-slurring and dynamic control.

Typical material—Studies: R. Getchell, *Practical Studies,* Book 1; W. Beeler, *Method,* Book 2; R. Endresen, *Supplementary Studies.*

Solos: G. Mullins, *Twelve Easy Classics for Trombone* (transcribed).

Technic—All major scales and arpeggios, one octave, in eighth notes, M.M. quarter note = 72.

Tuba 3

Extension of range and development of flexibility and legato style.

Typical material—Studies: R. Getchell, *Practical Studies,* Book 2; Skornicka, *Intermediate Method;* Eby, *Method,* Book 1.

Solos: A. Ostrander, *Concert Album for Tuba.*

Technic—All major scales and straight arpeggios, one or two octaves, in eighth notes and in eighth note triplets, M.M. quarter note = 72.

Tuba 4

Further increase in range, technical facility and legato control.

Typical material—Studies: H. Voxman, *Advanced Method,* Vol. 1 and 2; R. Fink, *Melodic Studies.*

Solos: A. Ostrander, *Concert Album for Tuba.*

Technic—All major and minor scales and straight arpeggios, one and two octaves, in simple and compound rhythm patterns, M.M. quarter note = 72.

Tuba 5

A review of all the fundamentals of tuba playing. Work on double and triple tonguing. Playing of trombone music an octave lower.

Typical material—Studies: J. Cimera, 79 *Studies;* J. Rochut, *Melodious Etudes,* Book 1; H. W. Tyrrell, *Advanced Studies.*

Solos: B. Beach, *Lamento;* L. Sowerby, *Chaconne.*

Technic—All major and minor scales, the same as Tuba 4, plus in diatonic pattern, all at M.M. quarter note = 84. Major and minor arpeggios in straight and broken form at M.M. quarter note = 72.

Tuba 6

Work on improvisation. Advanced work in flexibility.

Typical material—Studies: Continuation of J. Rochut, *Melodious Etudes,* Vol. 1; A. Slama, 66 *Etudes in All Keys for Trombone;* C. Colin, *Progressive Technique.*

Solos: T. Beversdorf, *Sonata;* Bach-Bell, *Air and Bouree;* Beethoven-Bell, *Judas Maccabeus.*

Technic—Scales as in Tuba 5 with increased speeds, plus quintuplet grouping. Arpeggios as in Tuba 5, plus augmented, dominant seventh and diminished seventh.

Tuba 7

Playing from trumpet music for practice purposes. Emphasis on recital literature.

Typical material—Studies: E. Gates, *Odd Meter Etudes for All Treble Clef Instruments;* J. Rochut, *Melodious Etudes,* Vol. 2; B. Gregoriev, 78 *Etudes.*

Solos: A. Frankenpohl, *Concertino;* R. Spillman, *Concerto.*
Technic—Same as in Tuba 6 with increased speeds.

TUBA 8

Study of standard orchestral repertoire. Velocity studies and further development of solo style.

Typical material—Studies: V. Blazhevich, 70 *Etudes;* J. Rochut, *Melodious Etudes,* Vol. 3; R. Wagner and R. Strauss, *Orchestral Excerpts.*

Solos: V. Persichetti, *Serenade No.* 12 *for Solo Tuba;* W. Hartley, *Sonatina;* A. Lebedev, *Concert Allegro.*

Technic—Same as in Tuba 7 with increased speeds.

TUBA 9

Continuation of trumpet and trombone literature study.

Typical material—Studies: J. Rochut, *Melodious Etudes,* Vol. 3; Laurent, *Etudes Pratiques,* Book 3; W. Sear, *Orchestral Excerpts.*

Solos: W. Schmidt, *Serenade;* A. Wilder, *Sonata.*

Technic—Same as Tuba 8 with increased speeds.

TUBA 10

A coverage of all types of style and technique used in solo, orchestral and ensemble playing. Memorization of standard orchestral excerpts and selected recital pieces.

Typical material—Studies: Continuation of trombone and trumpet literature study.

Solos: P. Hindemith, *Sonata;* R. Vaughn-Williams, *Concerto.*

Technic—Same as Tuba 9 with increased speeds.

PERCUSSION — MUSIC 150 SECTION 08

PERCUSSION 1

Stick position and motion, alternating single strokes, preparatory exercises for the roll, reading material containing single strokes. Haskell Harr, *Drum Method,* Book I.

PERCUSSION 2

Roll, 5 stroke roll, 9 stroke roll, flam. Basic technique on bass drum, cymbals. Harr, *Drum Method,* Book I.

PERCUSSION 3

7 stroke roll, flam accent, single paradiddle. Basic technique on triangle, tambourine, wood block, claves and maracas. Harr, *Drum Method,* Book I complete.

PERCUSSION 4

Snare Drum: Completion of the twenty-six rudiments. Combined refinement of technique and control. Basic technique on all accessories.

Studies: Wilcoxin, Stone, Gardner, Price.

Timpani: Beginning technique and tuning, grip, attack, roll, exercises for ear training.

Xylophone: Beginning technique and reading exercises, scales, arpeggios, and double stops. Studies: Goldenberg, *Modern School.*

PERCUSSION 5

Snare Drum: Work in advanced technique and control, contemporary and rudimental solos. Studies: Goldenberg, Wilcoxin, Stone.

Timpani: Tuning exercises and cross stickings; Goodman, *Modern Method for Tympani.*

Xylophone: Major and minor scales and chords two octaves; advanced exercises and etudes. Studies: Goldenberg and Gardner.

PERCUSSION 6

Snare Drum: Continuation of level 5. Addition of Latin drumming and coordination exercises. Studies: Morales, Pace, Wilcoxin.

Timpani: Three drum techniques, quick tone changes. Goodman and Gardner methods.

Xylophone: Scales and chords in three octaves, double stops in thirds, sixths, and octaves. Transcriptions of violin and flute sonatas of Loeillet, Handel, Bach.

PERCUSSION 7

Snare Drum: Advanced coordination studies. Work on recital literature and orchestral excerpts. Studies: Chapin, Gardner, Podenski.

Timpani: Four drum technique, advanced tuning changes, glissandi. Goodman and Gardner methods.

Xylophone: Continuation of level 6. Beginning three and four mallet studies. Rubank and Kraus methods.

PERCUSSION 8

Snare Drum: Advanced reading and coordination exercises. Studies: Sternberg, Cerolli, Chapin, Gardner.

Timpani: Solo literature and orchestral studies, continued tuning and pedal exercises. Goodman and Gardner methods.

Xylophone: Solo literature and orchestral excerpts, advanced etudes, three and four mallet exercises. Studies: Kraus, Peterson, Goldenberg.

PERCUSSION 9

Snare Drum: Added emphasis on solo and orchestral literature. Studies: Goldenberg, Gardner, Sternberg.

Timpani: Quick tuning changes, modern arrangements and orchestral studies.

Xylophone: Three and four mallet transcriptions for marimba and vibraphone, improvisation, modern arrangements.

PERCUSSION 10

Snare Drum: Review of all techniques and styles required for solo and ensemble playing. Studies: Dalghren, Cerolli, Gardner, Goldenberg.

Timpani: Concertos, sonatas and solos from Tausch, Jones, Carter, Bartok.

Xylophone: Solos, concertos, sonatas by Creston, Milhaud, Chopin, Bach, Handel. Continued three and four mallet transcriptions and arrangements.

VOICE — MUSIC 150 SECTION 18

Applied Voice Majors and Music Education Majors with Voice as major applied field should give evidence of ability to sing simple standard or classic art songs with adequate tone quality and intonation. In those cases where formal musical training is lacking the candidate should be assigned to a preparatory status by the Auditions Committee until such time as he is prepared to meet requirements set in Level 1.

Music Education majors with voice as their major applied field must have repertoire in two foreign languages to satisfy degree requirements. Applied voice majors must have repertoire in three languages to satisfy degree requirements.

LEVEL 1

Simple songs of moderate range in English, as from *Art Songs for School and Studio, Singable Songs, Pathways of Song,* etc.

LEVEL 2

Mire difficult songs from such beginners' collections as those listed above.

LEVEL 3

Literature contained in levels 1 and 2; songs selected from H. Lane Wilson's *Old English Melodies* (Boosey and Hawkes) and Potter's *Reliquary of English Song* (Schirmer) or easier songs of Handel and Purcell. Performance should be simple. straightforward and accurate and should demonstrate the beginnings of an awareness of style and sensitivity to text.

Applied Voice Majors and Music Education Majors with Voice as major applied field should give evidence of ability to sing standard or classic art songs with adequate tone quality and intonation. In those cases where formal musical training

is lacking the candidate should be assigned to a preparatory status by the Auditions Committee until such time as he is prepared to meet requirements set in Level 1. Some previous piano study is advisable.

Music Education majors with voice as their major applied field must have repertoire in two foreign languages to satisfy degree requirements. Applied voice majors must have repertoire in three languages to satisfy degree requirements.

LEVEL 4

Moderately difficult classic repertoire in English (Handel, Purcell, Haydn). Beginning songs from the *Anthology of Italian Song* (Schirmer). Romantic and contemporary repertoire in English as Edward Elgar, Edward MacDowell, Ernest Charles, Roger Quilter, Michael Tead. Performance should demonstrate serious attention to phrasing in good taste and in keeping with stylistic demands of the period; evidence of increasing ability to apply knowledge gained in other music courses, notably Theory, to gain insight into the music performed; beginnings of the mastery of vocal technique as evidenced by increased resonance and range, ability to sustain the breath, ability to execute attacks and releases, control dynamic changes within the phrase.

LEVEL 5

Continuation of classic Italian repertoire to include songs to develop flexibility and precise execution of embellishments. Italian airs of Donaudy. English songs of greater musical complexity as Carpenter, Vaughn Williams, Duke, John Ireland. Performance should demonstrate an expansion of vocal technique and general musical literacy outlined in level 4.

LEVEL 6

More difficult Italian Baroque Arias as Handel, Scarlatti, Pergolesi containing florid passages. Other Italian airs outlined in levels 4 and 5 with greater command of even legato, open and well placed vowels, clear diction. For Music Education voice majors this level to include also simple Lieder of Franz, Schubert, Schumann; or French folk songs, Bergerettes (Weckerlin), or simpler songs of Hahn, Debussy, Goddard, etc. English songs as Barber's *Sure on This Shining Night*, Chandler's *The Children*, Nordoff's *There shall be More Joy*. Entering Applied voice majors should show a reasonable command of skills outlined in levels 4 and 5 and should have better than average vocal endowment (i.e. a good instrument). In addition, both Applied and Music Education majors should evidence in performance the beginnings of ability to project (i.e. audience contact or the ability to "put a song over").

LEVEL 7

Continuation of Classic Italian Literature. Easy oratorio and operatic arias. Lieder of the difficulty of Schubert's *Wohin*, Schumann's *Widmung*, Brahms' *Wie bist du meine Konegin*, or French art songs as Debussy's *Romance*, Faure's *Les Berceaux*, Godard's *Chanson de Florian*. Songs in English as Griffes' *By a Lonely Forest Pathway;* Hageman, *At the Well*.

LEVEL 8

German Lieder: Schumann's *Er der Herrlichste von Allen;* Schumann's *Und wusstens die Blumen die Kleinen;* Schubert's *Ungeduld;* Brahms' *Vergebliches Standchen*. French art songs as Debussy's *Chevaux de bois, Mandoline;* Duparc's *Chanson Triste;* Faure's *En priere, Lydia;* Koechlin's *Si tu le veux;* Hahn's *L'heure exquise*. Moderately difficult oratorio and operatic arias. Songs in English of Castelnuovo—Tedesco, Dello Joio, Hindemith, Britten, etc.

LEVEL 9

Continuation of 19th century Lieder with the addition of Wolf and Strauss. Continuation of 19th century French art songs. Contemporary Italian songs as Casella, Malipiero, Pizzett, Respighi. Contemporary songs in English as Bernstein's *I Hate Music;* Ernst Bacon's *Quiet Songs;* Chanler's *Eight Epitaphs;* Vaughn Williams' *Songs of Travel;* Wagenaar *From a Very Little Sphinx;* Britten's *Winter Words*. Continuation of oratorio and operatic literature,

LEVEL 10

Arias from the cantatas of J. S. Bach or solo cantatas of Scarlatti, Handel, Pergolesi, etc. 19th and 20th century Lieder of Mahler, Joseph Marx, Liszt, Wagner and later works of Wolf and Strauss. 19th and 20th century French Songs of Debussy, Ravel, Poulenc, Milhaud, Satic, Honegger, Messaien. Continuation of Contemporary Italian literature. Contemporary songs in English of Copland, Barber, Rorem, Diamond, Vaughn Williams.

GRADUATE LEVEL

Sing cycles as Schumann's *Frauen Liebe und Leben;* Brahms' *Four Serious Songs;* Mahler's *Songs of A Wayfarer;* Poulenc's *Banalitis;* Ravel's *Sheherazade;* Debussy's *Trois Ballades;* Britten *Charm of Lullabys;* Vaughn Williams *On Wenlock Edge;* Hindemith's *Marienleben;* Barber's *Hermit Songs.* Complete operatic and oratorio roles. Songs of Berg, Schoenberg, Bartok, Stravinsky, DeFalla, Turina, Moussorgsky, Copland, Menotti, Cowell, Virgil Thompson.

The Division of Art

OBJECTIVE

The Division of Art strives to provide professional and academic preparation in Art (painting, drawing, art history, design, modeling) and to fulfill the aesthetic and technical needs for Art in the University, the State, and the region.

PURPOSES

The Division of Art:

1. Educates students in all of the styles, techniques and history of painting, sculpture and the allied arts.
2. Stimulates experimentation, graduate study, and scholarly research in art.
3. Offers opportunities for students in all departments of the University to participate in painting, sculpture, the graphic arts, and in allied art exhibits.
4. Provides the University, the State, and area with student, faculty, and traveling art exhibits.
5. Prepares students for teaching and other professional careers.
6. Provides professional instruction for talented young artists of pre-university age.
7. Stimulates interest and appreciation of art in the community, the State, and the region.

General Information and Degree Requirements

The Division of Art is located in Science Hall. Included among its facilities are six studios, one lecture room, one modeling studio, and a well-equipped art gallery. The Division also has a large collection of slides and colored prints.

STUDENT ORGANIZATION

The Division of Art sponsors the *Art Club.*

THE BACHELOR OF ART DEGREE

The Bachelor of Art Degree is conferred upon any student who complies with the general regulations of the University concerning degrees, satisfies all entrance and departmental requirements, and completes the curricula in Art with an average of 2.0 (C) grade points per semester hour.

Transfer students must establish transfer credit from other institutions during the first semester in which they are enrolled in the Division of Art.

ART CURRICULUM

Freshman Year	*First Sem.*	*Second Sem.*	*Course Description*
Art 11, 12	3	3	Drawing
Art 30	-	3	Appreciation of art
English 1, 2	3	3	Composition and rhet.
French or German 1, 2	3	3	French or German[1]
Biol. or Phys. Sci. 1, 2	4	4	Gen. Biol.; Intro. gen. course
Mil. Sci. or A.S. 1, 2 (M)	2	2	Mil. or Air Sci.
Phys. Ed.	1	1	Phys. Ed.
Electives	2		
	Women 33 hr.		
	Men 37 hr.		
Sophomore Year			
Art 113, 114	3	3	Painting
Art 121, 122	3	3	Fundamentals of design
Art 126	-	3	Modeling—sculpture
English 5, 6	3	3	American lit.
French or German 3, 4	3	3	French or German cont'd.[1]
Hist. 1, 2	3	3	World civilization
Music 10	3	-	Appreciation of music
Mil. Sci. or A.S. 3, 4 (M)	2	2	Mil. or Air Sci.
Phys. Ed. (W)	1	1	Phys. Ed. (W)
	Women 38 hr.		
	Men 40 hr.		
Junior Year			
Art 105, 106	3	3	Survey of art
Art 117, 118	3	3	Painting
Art 211	-	3	Figure drawing
English 18	3	-	Advanced English comp.
English 163, 164	3	3	English literature
Econ. 51, 52, or Pol. Sci. 1, 2, or Sociol. 1, 160	3	3	6 hr. from this group
Bot. 204	4	-	Plant kingdom
Educ. 221	-	3	Audio-vis. res. for instrn.
	Women 37 hr.		
	Men 37 hr.		
Senior Year			
Art 213, 214, or 216, 217	6	6	Painting (6 hr. from group)
Art 220	2	-	Art and the schools
Art 225	-	3	Secondary school art
Art 250	3	-	Renaissance painting
Art 260	-	3	Modern painting
Humanities 141, 142	3	3	Great Books
Electives	6	3	
	Women 38 hr.		
	Men 38 hr.		

Total 146 hr. (Women)
152 hr. (Men)

[1]Art courses may be taken instead of the foreign language.

ART EDUCATION CURRICULUM

Freshman Year	*First Sem.*	*Second Sem.*	*Course Description*
Art 11, 12	3	3	Drawing
Art 105, 106	3	3	Survey of art
Art 121, 122	3	3	Fundamentals of design
English 1, 2	3	3	Composition and rhetoric
Core C	4	4	
Phys. Ed.	1	1	
Mil. Sci. or A.S. 1, 2	2	2	
	Women 34 hr.		
	Men 38 hr.		
Sophomore Year			
Art 113, 114	3	3	Painting
Art 126, 127	3	3	Modeling—sculpture
Speech 3 or 11 or Drama 50	3	-	Voice and Diction; Prin. Oral Comm.: Oral Interp.
English 5, 6	3	3	American literature
English 111	-	3	The English language
History 1, 2	3	3	World civilization
Math. 21, 22 or Math. 15	2	2	Intro. to Math.; Calculus
Phys. Ed. (W)	1	1	
Mil. Sci. or A.S. 3, 4	2	2	
	Women 36 hr.		
	Men 38 hr.		
Junior Year			
Art 220, 123	2	2	Art and the Schools; Lettering
*Art 117, 118	3	3	Painting
English 163, 164	3	3	English literature
English, choice of 166, 250, or 270	3	-	Upper division course in American literature
English, choice of 140, 141, 234, 244, 245	-	3	Upper division course in a major author or period before 1660
Soc. Sci. 1, 2	3	3	Intro. gen. course
Education 100	1	-	Orientation and selection
Education 105, 106	3	3	Human growth and develop.
	Women 35 hr.		
	Men 35 hr.		
Senior Year			
Art 260	-	3	Modern painting
English 142	3	-	Shakespeare
English, choice of 138, 139, 247, 248, 249, 257, 258	3	-	Course in a major author or period after 1660
English, choice of 118, 278, 280, or Humanities 141 or 142	3	-	Course including foreign literature in English translation; Great books
Music 10	3	-	Appreciation of music
Health Education 102	2	-	Sec. school health program
Education 221	3	-	Audio vis. res. for Instr.
Education 168	-	2	Mat. and Meth. in Art: Sec.
Education 120	-	4	Principles of teaching in secondary schools
Education 124	-	6	Student teaching (Art)
	Women 32 hr.		
	Men 32 hr.		

Total 137 hr. (Women)
143 hr. (Men)

TEACHER CERTIFICATION

Students successfully completing the Art Education curriculum will qualify for recommendation for the Professional Certificate, Grades 7-12 in Art and English. (See College of Human Resources and Education for specific requirements for teacher certification.)

GRADUATE STUDY

The Division of Art offers the Moster of Arts degree in Art. Please refer to the current Graduate School *Announcements* for further details regarding admission, requirements, curriculum, and courses.

COURSES OF INSTRUCTION IN ART

1. **Creative Expression in the Fine Arts.** I, II. 2 hr. Primarily for Elementary Education majors. An exploratory course designed to familiarize the student with the possibilities of creative expression through graphic media; to acquaint the student with the advantages and limitations of the various media; and to investigate the adaptability of these media at various grade levels.

2. **Creative Expressions in the Applied Arts.** I, II. 2 hr. A course similar to Art 1 but employing materials such as clay, plastelin, paper, felt, gasso, plaster, and the like, as a means of creative expression.

11 or 111. **Drawing.** I, II. 3 hr. Freehand drawing in pencil or charcoal.

12 or 112. **Drawing.** I, II. 3 hr. Freehand drawing in pencil or charcoal.

30. **Appreciation of the Fine Arts.** I, II. 3 hr. A study of outstanding works of art from times past as well as from the present day. Topics treated include: the materials with which the artist works; sources of the art impulse; and the relations of art to the civilization producing it.

105. **Survey of Art.** I. 3 hr History of art from pre-historic times to the Renaissance.

106. **Survey of Art.** II. 3 hr. History of art from the Renaissance to the present.

113. **Painting.** I. 3 hr. PR: Art 11, 12. Beginning watercolor.

114. **Painting.** II. 3 hr. PR: Art 11, 12. Beginning oil.

117. **Painting.** I. 3 hr. PR: Art 113. Second semester watercolor.

118. **Painting.** II. 3 hr. PR: Art 114. Second semester oil.

121. **Fundamentals of Design.** I. 3 hr.

122. **Fundamentals of Design.** II. 3 hr.

123. **Lettering.** II. 2 hr. Principles of design involved in lettering and their application. Offered alternate years.

126. **Modeling—Sculpture.** I. 3 hr. Introductory course in modeling—sculpture.

127. **Modeling—Sculpture.** II. 3 hr. Second semester course in modeling—sculpture.

151. **Special Problems.** I. 1-3 hr.

152. **Special Problems.** II. 1-3 hr.

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*Art Education Majors with emphasis other than painting in major area may take Art 151 and 152 instead of Art 117 and 118 with approval of the adviser.

**Art Education Majors may qualify for specializations other than English with approval of the adviser.

211. **Figure Drawing.** I, II. 3 hr. PR: Art 11 or 111, 12 or 112, and/or consent. Study of the construction of the figure. Drawing from the draped and partially draped model.

213. **Painting.** I. 3 hr. PR: Art 113, 117, and consent. First semester advanced watercolor.

214. **Painting.** II. 3 hr. PR: Art 213 and consent. Second semester advanced watercolor.

216. **Painting.** II. 3 hr. PR: Art 114, 118, and consent. First semester advanced oil painting.

217. **Painting.** II. 3 hr. PR: Art 216 and consent. Second semester advanced oil painting.

220. **Art and the Schools.** I. 2 hr. PR: 4 hr. of art including a minimum of 2 hr. studio. The function of art in the curriculum of various grade levels and a study of standards of achievement.

221. **Administration and Supervision of Art.** II. 2 hr. PR: Art 220. Mainly for administrators and school principals who wish to become informed about art programs and the philosophies underlying them.

225. **Secondary School Art.** II. 3 hr. PR: Art 11 or 111, 12 or 112, 121, 122, 113, 114, and consent. Information and working skills desirable for the teaching of art on the secondary school level. Offered alternate years.

241. **Medieval Architecture.** I or II. 3 hr. PR: Art 105, 106. A study of architecture from the time of Constantine to the Renaissance. Offered alternate years.

250. **Renaissance Painting.** I. 3 hr. PR: Art 105, 106. A study of painting in Italy from Cimebue to Tiepolo; the Renaissance in Western Europe; a brief consideration of baroque and rococo painting as an outgrowth of the Renaissance.

260. **Modern Painting.** II. 3 hr. PR: Art 105, 106. Developments in painting from the French Revolution to the present day.

271. **American Architecture.** I or II. 3 hr. PR: Art 105, 106. Developments in architecture in North America from Pre-Columbian times to the present day. Emphasis will be placed on the architecture of the United States. Offered alternate years.

275. **Latin American Art.** I or II. 3 hr. PR: Consent. From Pre-Columbian times to the present. Outstanding examples of the various periods will be considered.

290. **Study of Original Works of Art.** 6 hr. PR: Art 105, 106, and consent of the Division Chairman. Directed study in the museums and libraries in an urban center such as Washington or New York; a study of the architectural developments of the locality. Offered alternate years.

The Division of Drama

OBJECTIVE

The Division of Drama strives to provide professional and academic preparation in drama (dramatic literature, theatre, and oral interpretation), and to satisfy the aesthetic need for these arts in the community and region.

PURPOSES

The Division of Drama:

1. Fosters a climate of creativity in drama for students, faculty, and the community.
2. Instills an appreciation of drama in our students and in our audiences.
3. Promotes integration of the creative arts.
4. Prepares students for teaching and other professional careers.
5. Develops high professional quality in drama.
6. Encourages scholarly research, experimental work, and graduate study in all aspects of drama.
7. Serves other areas of the University academically and culturally.
8. Provides opportunities for the University community to associate with and learn from professional artists.
9. Provides the benefits of drama to the community, the State, and the region.

General Information and Degree Requirements

The Division of Drama of the Creative Arts Center is associated with national educational theatre organizations and represents, in its basic academic structure, generally accepted practices and procedures.

The faculty consists of artists-teachers with specialized and outstanding backgrounds in both academic and professional performance experiences. Each member of the faculty assumes course work and laboratory supervision in his special field of emphasis. All areas of drama and theatre are included in the curriculum. Regular series of theatre productions are maintained as practical laboratories in the Drama program.

Many of the courses in Drama provide preparation that may lead to careers and occupations in a variety of fields.

DRAMA ORGANIZATIONS

UNIVERSITY THEATRE

The Division of Drama produces, under the name University Theatre, a complete season of faculty directed play productions in the main campus theatre. The season is open to the public under regular theatre management procedures with box office facilities offering sale of season and reserved seat tickets.

STUDIO THEATRE

The Division of Drama maintains separate facilities for the production of new and unusual plays, and for classical and experimental works which may not find a voice on the commercial stage. The studio program provides a training ground for actors, writers, directors, designers, and technicians. Plays in this theatre are directed by faculty or advanced students and are open or closed to the general public, depending on the purpose of the production.

ONE-ACT PLAY PRODUCTIONS

A regular laboratory performance schedule is maintained for student directed and acted one-act plays. During the academic year as many as sixty productions are performed before student audiences.

ORAL INTERPRETATION

Students enrolled in oral interpretation courses offer individual and group recitals in regularly scheduled performances open to the public. A wide range of special programs are also offered to civic, religious and other organizations, including radio and television appearances.

VERSE CHOIR

The Division of Drama sponsors a verse choir for major and non-major students with scheduled public performances.

STUDENT ORGANIZATION

The Division of Drama sponsors a chapter of the national Drama fraternity *National Collegiate Players.*

THE BACHELOR OF FINE ARTS IN DRAMA

The B.F.A. Degree is conferred upon any student who complies with the general regulations of the University concerning degrees, satisfies all entrance and Division requirements, and completes one of the following options in the curriculum of the Division of Drama with a total average of 2.0 (C) grade points per semester hour.

A. Acting-Directing option.
B. Design and Technical Theatre option.

A freshman student who has less than a 1.0 (D) grade-point average at the close of his second semester is automatically suspended from the Division of Drama. A freshman who has less than a 1.5 grade-point average at the close of his second semester is automatically placed on probation for the following semester. The terms of probation will be determined by the Scholarship Committee.

For admission to the junior year in the Division of Drama, a student must have established a 2.0 (C) grade-point average.

Transfer students must establish transfer credit from other institutions during the first semester in which they are enrolled in the Division of Drama.

Students are responsible for correctly fulfilling all requirements.

TEACHER CERTIFICATION

Certification in Drama is a part of the combined Speech-Drama teacher-preparation program under the College of Arts and Sciences.

GRADUATE STUDY

The Division of Drama offers a graduate degree, Master of Arts in Drama, with specialization in directing or design. See the current Graduate School *Announcements* for further details regarding admission, requirements, curriculum, and courses.

DIVISION OF DRAMA COMMITTEE

Scholarship Committee: Professors Boyd, *Chairman,* and Burrows; Associate Professor Ford.

APPLIED DRAMA CURRICULUM

Freshman Year	*First Sem.*	*Second Sem.*	*Course Description*
Drama 75; 50	3	3	Acting; Oral interp.
Drama 100, 51	3	3	Stagecraft, Vocal tech.
Drama 185; 176	3	3	Theat. hist.; Theatre makeup
Drama 101	1	-	Theatre workshop
English 1, 2	3	3	Composition and rhet.
Elective	3	3	
Art 30 A[1]	3	-	Art apprec.
Core Curriculum B[1]	-	3	
Phys. Ed.	1	1	
Mil. Sci. or A.S. 1, 2 (M)	2	2	
	Women 39 hr.		
	Men 43 hr.		
Sophomore Year			
Drama 102; 103	3	3	Scene des.; Theatre light.
Drama 150 or Art 121	3	-	Adv. oral interp.; drawing
Drama 160	3	3	Theat. perform. & rehearsal
Drama 180	3	3	Directing
Speech 145 or Art 12, 112	-	3	T.V. survey; drawing
Art 105 or 106 A[1]	3	-	Drawing
Core Curriculum B[1], C[1]	3	6	
Phys. Ed. (W)	1	1	
Mil. Sci. or A.S. 3, 4 (M)	2	2	
Elective[2] (Music 150)	-	2-3	Voice or elective
	Women 37-38 hr.		
	Men 39-40 hr.		
Junior Year			
Drama 104	3	-	Theatre costumes
Drama 161	3	3	Perform. & rehearsal lab.
Drama 202 or 275	-	3	Adv. scene des. or Adv. act.
Drama 200 Level Courses[2]	3	3	
Music 10 A;[1] 138 A[1]	3	3	M. apprec.; Intro. to mus. hist.
Core Curriculum C[2]	3	3	
English 142	3	-	Shakespeare
Elective[2]	-	3	
	Women 36 hr.		
	Men 36 hr.		
Senior Year			
Drama 200 Level Courses[2]	3		
Drama 260	3	3	Theat. perform. & rehearsal lab.
Drama 285; 280	-	6	Adv. theat. hist.; Adv. directing
Drama 286	3	-	Theat. aesthetics & criticism
Core Curriculum B[1]	3	3	
Elective	6	6	
	Women 36 hr.		
	Men 36 hr.		

Total 149 hr. (Women)
155 hr. (Men)

Students may include art and music courses taken as electives in addition to required courses as listed. All course programs must be approved by a faculty adviser in Drama.

[1]See page 48 for explanation of the University Core Curriculum Requirements.

[2]Choice of courses depends upon option student is following. This will be determined in counsel with the adviser.

ACTING—VOICE OPTION

Freshman Year	*First Sem.*	*Second Sem.*	*Course Description*
Drama 75, 50	3	3	Acting; Oral interp.
Drama 51	-	3	Vocal tech.
Music 1, 2	4	4	First-year theory
Music 150[1]	2	2	Voice
Music 150[1]	1	1	Piano
English 1, 2	3	3	Composition and rhet.
Art 30 (A)	3	-	Apprec. of the arts
Core Curriculum (B)	-	3	
Phys. E.	1	1	
Mil. Sci. or A.S. 1, 2 (M)	2	2	
	Women 37 hr.		
	Men 41 hr.		
Sophomore Year			
Drama 102; 180	3	3	Scene des.; Directing
Drama 160	3	3	Theatre perform. & rehearsal
Music 150[1]	2	2	Voice
Music 150[1]	1	1	Piano
Drama 101	1	-	Theatre workshop
Drama 100	-	3	Stagecraft
Core Curriculum (B), (C)	3	6	
Phys. Ed. (W)	1	1	
Mil. Sci. or A.S. 3, 4 (M)	2	2	
Art 105, 106	3	-	Survey of art
	Women 36 hr.		
	Men 38 hr.		
Junior Year			
Drama 104, 176	3	3	Theatre cost.; Theatre makeup
Drama 161	3	3	Theat. perform. & rehears. lab.
Drama 150	3	-	Adv. oral interp.
Drama 200 level course[2]; 275	3	6	Elective; Adv. acting
Music 150[1]	2	2	Voice
Music 138 (A)	-	3	Intro. to music hist.
Core Curriculum (C)	3	3	
English 142	3	-	Shakespeare
	Women 40 hr.		
	Men 40 hr.		
Senior Year			
Drama 185; 285	3	3	Hist. of theat.; Adv. hist. of theat.
Drama 260	3	3	Theat. perform.; Rehearsal lab.
Drama 286, 103	3	3	Crit. & aesthetics; Theat. light design
Drama 200 level courses[2]	3	-	
Drama 280	-	3	Adv. directing
Music 150	2	2	Voice
Core Curriculum (B)	6	-	
	Women 34 hr.		
	Men 34 hr.		

Total 147 hr. (Women)
153 hr. (Men)

[1]Students must attain a final voice level of 7 and piano level of 2B.
[2]Choice of courses depends upon option student is following. This will be determined in counsel with the adviser.

COURSES OF INSTRUCTION IN DRAMA

50. **Oral Interpretation.** I, II. 3 hr. Development of mental and emotional responsiveness to written material. Techniques of communicating such material to others through oral reading. Open to all students.

51. **Vocal Techniques in Acting.** II. 3 hr. Emphasis on vocal development and voice training for actors.

75. **Acting.** I, II. 3 hr. Drills for developing muscular control for overcoming inhibitions, for rendering the body expressive of thought and emotion. Coordination of mind and body. Open to all students.

100. **Stagecraft.** I, II. 3 hr. Lecture course in elementary problems of scenery construction, scene painting, and stage lighting.

101. **Theatre Workshop.** I, II. 1-3 hr. Laboratory for production of University plays and informal stimulation of interest in creative arts. Open to all students.

102. **Scene Design.** I. 3 hr. Introduction to problems of creating stage settings. Elementary consideration of styles of production. Practice in techniques of scene design.

103. **Theatre Lighting Design.** I, II. 3 hr. Basic techniques in stage lighting. Opportunity for practical experience on University Theatre lighting crews.

104. **History and Design of Costumes.** I, II. 3 hr. A survey of historical stage costuming with basic design including rendering techniques of costumes for the stage.

150. **Advanced Oral Interpretation.** I. 3 hr. PR: Drama 50. Content and form of various types of literature, and advanced techniques for their oral presentation.

160. **Theatre Performance and Rehearsal Laboratory.** I, II. 1 to 3 hr. PR: Consent. Participation in assigned theatre projects. Appreciation of creativity and performance techniques in theatre. Majors only. Max. credit 6 hr.

161. **Theatre Performance and Rehearsal Laboratory.** I, II. 1 to 3 hr. PR: Drama 160 or consent. Participation in assigned theatre projects. Appreciation of creativity and performance techniques in theatre. Majors only. Max. credit 6 hr.

176. **Theatre Makeup.** I, II. 3 hr. Lecture-laboratory course in art of stage makeup. Practical experience provided by doing makeup for University Theatre productions.

177. **Theatrical Methods and Practices.** I, II. 2 hr. Basic techniques and terminologies of acting, scene construction, lighting, properties, costuming, directing, and theatre history. (Must accompany Drama 178 for credit). Non-majors.

178. **Theatrical Methods and Practices Laboratory.** I, II. 1 hr. Laboratory accompanies Drama 177. Participation in actual production of University Theatre and Children's Theatre plays. Non-majors.

179. **Directed Theatre Activities.** I, II. 0 to 4 hr. Assigned theatre projects, supervised by faculty. Non-majors. Maximum credit in any one semester 3 hr.

180. **Directing.** I, II. 3 hr. Fundamentals of directing stage plays. Emphasis on work of director in relation to actor, stage, business, composition, movement and rehearsal schedule.

185. **History of the Theatre.** I. 3 hr. An examination of the major periods of theatre history through study of the important playwrights of each era.

202. **Advanced Scene Design.** II. 3 hr. PR: Drama 100 and 102, or consent. Lecture and laboratory in theories of scene design for stage and television, including actual construction of designs. Open to juniors, seniors, and graduate students.

203. **Advanced Production Design.** I, II. 3 hr. PR: Consent. Student work in a specific area of technical theatre for advanced credit. May be repeated up to a maximum of 6 hours.

250. **Advanced Problems in Interpretation.** I. 3 hr. PR: Drama 50 and consent. Designed to deal with individual problems of advanced students in interpretation.

251. **Professional Reading.** II. 3 hr. PR: Consent. Intensive training in interpretation. Designed to meet needs of individual. Full-length public recital prepared and presented. Limited enrollment.

252. **Art of Storytelling.** S. 3 hr. PR: Consent. Principles involved in effective presentation of stories, with practical experience in classroom and before audiences. Stories of all types for adults and children studied.

260. **Theatre Performance and Rehearsal Laboratory.** I, II. 1 to 3 hr. PR: Drama 161 or consent. Participation in assigned theatre projects. Appreciation of creativity and performance techniques in theatre. Majors only. Max. credit 6 hr.

275. **Advanced Acting.** II. 3 hr. PR: Drama 75 and consent. Characterization, script analysis, style, theories, and techniques. Designed to meet the needs of individual students.

280. **Advanced Directing.** II. 3 hr. PR: Drama 180 or consent. Emphasis on the work of the director as an integrating artist. Display of high level of proficiency in direction of a one-act play required of all students enrolled.

281. **Theatre Dialects.** I. 3 hr. PR: Consent. Study and mastery of fifteen common dialects used in theatre, motion pictures and television.

282. **Creative Dramatics.** II. 3 hr. PR: Drama 75 or consent. The study and practice of creative dramatic activity as a method of learning and self-development for children.

283. **Playwriting.** II. 3 hr. PR: Consent. Development of creative ability in dramatic composition. Study of techniques and problems of playwriting. Of cultural value, but primarily a writing course.

285. **Advanced History of Theatre.** II. 3 hr. Historical survey of theatre from primitive times to present. Includes both oriental and occidental theatres.

286. **Drama Criticism and Aesthetics.** I. 3 hr. A survey of chief critical and aesthetic theories of drama—ancient, modern, and contemporary.

The College of Engineering and The School of Mines

COLLEGE OF ENGINEERING—ADMINISTRATION

Chester A. Arents, P.E., M.E., *Dean of the College of Engineering* (1955).
James A. Kent, P.E., Ph.D., *Associate Dean of the College of Engineering* (1965), 1954.
George W. Weaver, P.E., M.S.M.E., *Assistant Dean of the College of Engineering* (1966), 1948.

FACULTY OF THE COLLEGE OF ENGINEERING

Aerospace Engineering

Jerome B. Fanucci, Ph.D., *Professor and Chairman of Aerospace Engineering* (1964).
Jonathan M. Bennett, *Chief Flight Instructor in Aerospace Engineering* (1956), 1951.
Larry W. Dooley, M.S.A.E., *Instructor in Aerospace Engineering* (1966).
Yu Kao Hsu, Ph.D., *Assistant Professor of Aerospace Engineering* (1966).
John L. Loth, Ph.D., *Associate Professor of Aerospace Engineering* (1967).
Nathan Ness, Ph.D., *Professor of Aerospace Engineering* (1964).
William Squire, M.A., *Professor of Aerospace Engineering* (1961).
Richard E. Walters, M.S.A.E., *Instructor in Aerospace Engineering* (1959).
Syed Yusuff, Ph.D., *Professor of Aerospace Engineering* (1965).

Agricultural Engineering

Alfred Delbert Longhouse, P.E., Ph.D., *Professor and Chairman of Agricultural Engineering* (1945), 1938.
Waldo E. Bell, B.S.Ag.E., *Assistant Professor of Agricultural Engineering* (1966), and *State Extension Agricultural Engineering Specialist* (1945).
Edmond B. Collins, M.S.Ag.E., *Assistant Professor of Agricultural Engineering* (1965), 1960. (Assigned to Egerton College, Njoro, Kenya, East Africa).
Chester A. Cromer, M.S.Ag.E., *Assistant Professor of Agricultural Engineering* (1964). (Assigned to Tanzania Agricultural College, Morogori, Tanzania, East Africa).
Walter Howard Dickerson, P.E., M.S.Ag.E., *Professor of Agricultural Engineering* (1957), 1953.
Kendall C. Elliott, M.S.Ag.E., *Assistant Professor of Agricultural Engineering* (1962), 1954.
Roy E. Emerson, M.S., *Associate Professor of Agricultural Engineering* (1957), 1940.
Mylo A. Hellickson, M.S.Ag.E., *Research Assistant in Agricultural Engineering* (1966).
Homer W. Parker, P.E., B.S., *Instructor in Agricultural Engineering* (Project Leader, stationed with Department of Agricultural Engineering in cooperation with U.S. Forest Service Engineering Research Laboratory (1964).
Randall C. Reeder, B.S.Ag.E., *Instructor in Agricultural Engineering* (1966).
Arthur W. Selders, M.S.Ag.E., *Assistant Professor of Agricultural Engineering* (1966), and *State Extension Agricultural Engineering Specialist* (1963).
Richard A. Spray, B.S.Ag.E., *Instructor in Agricultural Engineering* (1967).
Gerald E. Thierstein, M.S.Ag.E., *Assistant Professor of Agricultural Engineering* (1962). (Assigned to Egerton College, Kenya, East Africa).
John Lowell Wagner, M.S.Ag.E., *Assistant Professor of Agricultural Engineering* (1965). (Assigned to Egerton College, Kenya, East Africa).
Robert O. Weedfall, B.S., *Instructor in Agricultural Engineering* (1963). (Climatologist, stationed with Department of Agricultural Engineering in cooperation with U.S. Weather Bureau).

Chemical Engineering

Howard P. Simons, P.E., Ph.D., *Professor and Chairman of Chemical Engineering* (1959), 1939.
Richard C. Bailie, Ph.D., *Associate Professor of Chemical Engineering* (1965).
George L. Blackshaw, Ph.D., *Assistant Professor of Nuclear Engineering* (1965).
William R. Boyle, P.E., Ph.D., *Associate Professor of Chemical Engineering* (1967), 1961.
Harold V. Fairbanks, P.E., M.S.Ch.E., *Professor of Metallurgical Engineering* (1955), 1947.
Alfred F. Galli, P.E., M.S.Ch.E., *Associate Professor of Chemical Engineering* (1962), 1947.
Dean O. Harper, M.S., *Assistant Professor of Chemical Engineering* (1963).
Paul R. Jones, P.E., M.Sc., *Professor of Ceramic Engineering* (1957), 1947.
James A. Kent, P.E., Ph.D., *Professor of Nuclear Engineering* (1958), 1954; *Associate Director, Engineering Experiment Station* (1963), *Associate Dean, College of Engineering* (1965).
Walter A. Koehler, P.E., Ph.D., *Professor and Director Emeritus* (1963), 1924.
Chin-Yung Wen, Ph.D., *Professor of Chemical Engineering* (1964), 1954.

Civil Engineering

James H. Schaub, P.E., Ph.D., *Professor and Chairman of Civil Engineering* (1960).
Wilford D. Baker, M.S.E.E., *Instructor in Electrical Engineering* (1964).
Jerry C. Burchinal, P.E., M.S.C.E., *Professor of Civil Engineering* (1962), 1946.
Everett C. Carter, M. of E., *Assistant Professor of Civil Engineering* (1963).
Roland P. Davis, P.E., Ph.D., *Dean Emeritus, College of Engineering* (1955), 1911.
Charles R. Jenkins, Ph.D., *Associate Professor of Sanitary Engineering* (1964), 1961.
Emory L. Kemp, P.E., Ph.D., *Professor of Civil Engineering* (1965), 1962.
Benjamin Linsky, P.E., B.S.M.E., M.S.E., *Professor of Sanitary Engineering* (Air Pollution) (1963).
Larry D. Luttrell, Ph.D., *Assistant Professor of Civil Engineering* (1965).
Lyle K. Moulton, M.S.C.E., *Instructor in Civil Engineering* (1963).
Frank M. Noonan, B.S.Chem., *Instructor and Director, Air Pollution Engineering Laboratories* (1966).
Byron E. Ruth, P.E., M.S.C.E., *Instructor in Civil Engineering* (1961).
William A. Sack, Ph.D., *Assistant Professor of Civil Engineering* (1966).
Roger K. Seals, M.S.E., *Assistant Professor of Civil Engineering* (1965).
Eugene F. Smith, Ph.D., *Assistant Professor of Civil Engineering* (1966).
Frederick J. Wegmann, Ph.D., *Assistant Professor of Civil Engineering* (1966).

Electrical Engineering

Edwin C. Jones, P.E., M.S.E.E., *Professor and Chairman of Electrical Engineering* (1948), 1925.
Wilford D. Baker, M.S.E.E., *Instructor in Electrical Engineering* (1964).
Edwin C. Barbe, M.S.E.E., *Assistant Professor of Electrical Engineering* (1959), 1956.
Everette C. Dubbe, P.E., B.S.E.E., *Associate Professor of Electrical Engineering* (1959), 1947.
Patrick J. Hawkins, Ph.D., *Assistant Professor of Electrical Engineering* (1965).
Robert E. Lee, Ph.D., *Assistant Professor of Electrical Engineering* (1966).
George H. Patton, M.S.E.E., *Instructor in Electrical Engineering* (1967).
Mason M. Peterson, P.E., B.S.E.E., *Associate Professor of Electrical Engineering* (1948).
Marion J. Smith, P.E., M.S.E.E., *Professor of Electrical Engineering* (1956), 1954.
Nelson S. Smith, Jr., P.E., D.Sc., *Associate Professor of Electrical Engineering* (1962), 1956.
Robert E. Swartwout, Ph.D., *Professor of Electrical Engineering* (1963), 1962.

Industrial Engineering

Raymond E. Shafer, P.E., M.S.I.E., *Professor and Chairman of Industrial Engineering* (1957), 1949.

Charles L. Delaney, *Instructor in Shop Practice* (1950), 1945.
Steven J. Dodd, M.S.I.E., *Instructor in Industrial Engineering* (1964).
Samy E. G. Elias, B.Sc., Ph.D., *Professor of Industrial Engineering* (1967), 1965.
Robert D. Fowler, P.E., M.S.I.E., *Professor of Industrial Engineering* (1963), 1959.
Glenn F. Martin, *Instructor in Machine Shop and Welding Practice* (1940).
Joseph W. Schmidt, Jr., M.S.I.E., *Instructor in Industrial Engineering* (1962).

Mechanical Engineering

Howard W. Butler, P.E., Ph.D., *Professor and Chairman of Mechanical Engineering* (1965).
Harold Malcolm Cather, P.E., M.E., M.S.M.E., *Professor Emeritus* (1965), 1916.
Walters S. Chmielewski, Ph.D., *Assistant Professor of Mechanical Engineering* (1966).
Hasan T. Gencsoy, P.E., M.S.M.E., *Professor of Mechanical Engineering* (1967), 1956.
James C. Goodwin, B.S.M.E., *Instructor in Mechanical Engineering* (1965).
Thomas R. Long, M.S.M.E., *Instructor in Mechanical Engineering* (1958).
David E. McKee, M.S.E., *Instructor in Mechanical Engineering* (1963).
Henning Muller, Dr.-Ing., *Visiting Professor of Mechanical Engineering* (1966).
In Meei Neou, Ph.D., *Professor of Mechanical Engineering* (1967).
Alfred R. Nerz, B.S.M.E., *Instructor in Mechanical Engineering* (1966).
Jerome F. Parmer, P.E., Ph.D., *Associate Professor of Mechanical Engineering* (1964), 1957.
Joseph J. Saliga, B.S.M.E., *Instructor in Mechanical Engineering* (1966).
Shigeo Shin, Ph.D., *Visiting Assistant Professor of Mechanical Engineering* (1966).
Robert D. Slonneger, P.E., M.S.M.E., *Professor of Mechanical Engineering* (1963), 1954.
Emil J. Steinhardt, Ph.D., *Assistant Professor of Mechanical Engineering* (1965).
Thomas E. Watson, B.S.M.E., *Instructor in Mechanical Engineering* (1966).

Theoretical and Applied Mechanics

Edward F. Byars, P.E., Ph.D., *Professor and Chairman of Theoretical and Applied Mechanics* (1959).
Carl H. Cather, P.E., M.S., *Professor Emeritus* (1964), 1916.
Charles R. Evces, Ph.D., *Assistant Professor of Theoretical and Applied Mechanics* (1967).
Russell R. Haynes, M.S.T.A.M., *Instructor in Theoretical and Applied Mechanics; Research Associate, Engineering Experiment Station* (1962).
Warren G. Lambert, Ph.D., *Associate Professor of Theoretical and Applied Mechanics* (1965).
Mark Levinson, Ph.D., *Associate Professor of Theoretical and Applied Mechanics* (1966).
James H. McElhaney, P.E., Ph.D., *Associate Professor of Theoretical and Applied Mechanics* (1966), 1965.
Helen L. Plants, P.E., M.S.C.E., *Assistant Professor of Theoretical and Applied Mechanics* (1956), 1947.
Robert D. Snyder, Ph.D., *Associate Professor of Theoretical and Applied Mechanics* (1965), 1962.
James R. Stafford, Ph.D., *Assistant Professor of Theoretical and Applied Mechanics* (1967).
George W. Weaver, P.E., M.S.M.E., *Professor of Theoretical and Applied Mechanics* (1962), 1948; *Assistant to Dean, College of Engineering* (1961).
Donald T. Worrell, P.E., M.S.E.E., *Professor of Theoretical and Applied Mechanics* (1945), 1941.

College of Engineering Visiting Committee

William M. Thompson (*Chairman of Committee*), *Production Manager*, West Virginia Pulp and Paper Company, Luke, Md.
Edward J. Fox, *Regional Vice-President*, Union Carbide Corporation, 3839 West Alabama Avenue, Houston, Texas

James R. Mason, *President*, Mason and Barry, Inc., Box 3043, Charleston, W. Va.
Don B. Potter, 1188 Sands Drive, Fairmont, W. Va.
William H. Ruby, *Chief Engineer-Manager of Production*, Acme Limestone Company, Fort Spring, W. Va.

ENGINEERING EXPERIMENT STATION—ADMINISTRATION

Chester A. Arents, P.E., M.E., *Director* (1963), 1955.
James A. Kent, P.E., Ph.D., *Associate Director* (1963), 1954.
Jerome F. Parmer, P.E., Ph.D., *Assistant Director* (1966), 1957.
Charles T. Holland, P.E., M.S.E.M., *Dean of the School of Mines* (1961), 1930.
Howard W. Butler, P.E., Ph.D., *Professor and Chairman of Mechanical Engineering* (1965).
Edward F. Byars, P.E., Ph.D., *Professor and Chairman of Theoretical and Applied Mechanics* (1959).
Jerome B. Fanucci, Ph.D., *Professor and Chairman of Aerospace Engineering* (1964).
Edwin C. Jones, P.E., M.S.E.E., *Professor and Chairman of Electrical Engineering* (1948), 1925.
Alfred D. Longhouse, P.E., Ph.D., *Professor and Chairman of Agricultural Engineering* (1945), 1938.
James H. Schaub, P.E., Ph.D., *Professor and Chairman of Civil Engineering* (1960).
Raymond E. Shafer, P.E., M.S.I.E., *Professor and Chairman of Industrial Engineering* (1957), 1949.
Howard P. Simons, P.E., Ph.D., *Professor and Chairman of Chemical Engineering* (1959), 1939.

FACULTY OF THE SCHOOL OF MINES

Charles T. Holland, P.E., M.S.E.M., *Dean of the School of Mines; Director of Mining and Industrial Extension; Professor of Mining Engineering* (1961), 1930.
Richard W. Laird, P.E., M.S.E.M., *Associate Professor of Petroleum Engineering* (1962), 1947.
Joseph D. McClung, P.E., M.S.E.M., *Associate Professor of Mining Engineering* (1961), 1941.
Abdel K. Kotb, P.E., Ph.D., *Assistant Professor of Petroleum Engineering* (1966).
Ernest J. Sandy, P.E., B.S.E.M., *Assistant Professor of Mining Engineering* (1957), 1947.
James A. Wasson, P.E., M.S.P.E., *Assistant Professor of Petroleum Engineering* (1962), 1960.
Roscoe E. Hanna, Jr., P.E., B.S., *Supervisor of Industrial Extension; Assistant Director of Fire Service Extension* (1949), 1944.
George H. Pudlo, B.S.E.M., *Assistant Director of Mining Extension* (1964).
Ralph C. Bierer, *Instructor in Mining Extension* (1952).
Leslie E. Bradley, *Instructor in Mining Extension* (1945).
Ulysses G. Carter, B.S., *Instructor in Mining Extension* (1957).
Luther B. Ferguson, *Instructor in Mining Extension* (1957).
William L. Miles, B.S.F.P.E., *Instructor in Fire Service Training* (1966).
Peter P. Mintreas, B.S., *Instructor in Mining Extension* (1961).
James M. Morrison, *Instructor in Mining Extension* (1958).
Leland H. Winger, B.S.E.E., *Instructor in Mining Extension* (1952).

School of Mines Visiting Committee

D. A. Zegeer, (*Chairman of Committee*), *Division Superintendent*, Bethlehem Mines Corporation, Elkhorn Division, Jenkins, Ky.
Wendell S. Moore, *Manager of Production*, Cities Service Company, Embleton Building, P.O. Drawer 873, Charleston 23, W. Va.
Fred R. Toothman, *Engineer of Coal Properties*, Coal Development, Chesapeake & Ohio Railway Company, 701 C & O Building, Huntington, W. Va.
W. N. Poundstone, *Executive Vice President*, Consolidation Coal Company, Koppers Building, Pittsburgh, Pa.
Veleair C. Smith, *Management Consultant*, Kanawha Valley Building, Charleston, W. Va.

STAFF OF THE COAL RESEARCH BUREAU

Joseph W. Leonard, M.S., *Director of Coal Research Bureau* (1961); *Associate Professor of Mining Engineering* (1967), 1961.
Masood Akhtar, B.S.Pet.E., *Assistant Research Engineer* (1967), 1964.
Govind M. Chaudhari, B.S.Chem., *Assistant Research Chemist* (1967), 1966.
Charles F. Cockrell, B.S., *Supervising Research Chemist* (1967), 1963.
Bernard A. Donahue, B.S., *Associate Research Technologist* (1967), 1963.
Kathryn Huffman, M.S., *Research Chemist* (1964), 1944.
Kenneth K. Humphreys, P.E., B.S.Ch.E., *Senior Staff and Cost Engineer* (1967), 1965.
N. R. Kona, B.S.E.M., *Research Assistant* (1966), 1964.
William F. Lawrence, B.S., *Associate Research Technologist* (1967), 1964.
Charles R. McFadden, B.S., *Associate Research Technologist* (1967), 1962.
Harry E. Shafer, M.S., *Supervising Research Technologist* (1967), 1962.
Larry R. Stenger, M.S., *Instrumental Analyst and Instructor* (1967).
Entesham U. Syed, M.Sc., *Research Assistant* (1967), 1966.
Edwin B. Wilson, B.S.E.M., *Research Engineer* (1967), 1966.

Coal Research Bureau Advisory Committee

G. R. Higinbotham, *President* (Retired), Consolidation Coal Company, Mountaineer Coal Company Division, Box 1632, Fairmont, W. Va.
Cecil Urbaniak, United Mine Workers of America, Box 3P2, Fairmont, W. Va.
L. N. Thomas, Jr., *Assistant General Manager*, The Carbon Fuel Company, Decota, W. Va.
H. E. Jones, *President*, Amherst Coal Company, Port Amherst, Charleston, W. Va.

General Information

THE COLLEGE OF ENGINEERING; THE SCHOOL OF MINES

For the purpose of administration and instruction, the College of Engineering is organized into the following departments:

Aerospace Engineering (A.E.)
Agricultural Engineering (Ag.E.)
Chemical Engineering (Ch.E.)
Civil Engineering (C.E.)
Electrical Engineering (E.E.)
Mechanical Engineering (M.E.)
Industrial Engineering (I.E.)
Theoretical and Applied Mechanics (T.A.M.)

For the purpose of administration the School of Mines is divided into the following divisions:

Mining Engineering (E.M.)
Petroleum Engineering (Pet.E.)
Mining and Industrial Extension
Coal Research Bureau

Curricula Accredited By the Engineers' Council For Professional Development

The Engineer's Council for Professional Development, a joint body concerned with the enhancement of the status of the engineer and the engineering profession, has been designated by its constituent bodies (American Society of Civil Engineers, American Institute of Mining, Metallurgical and Petroleum Engineers, The American Society of Mechanical Engineers, The Institute of Electrical and Electronics Engineers, The American Society for Engineering Education, American Institute of Chemical Engineers, American Institute of Aeronautics and Astronautics, National Council of State Boards of Engineering Examiners, and the Engineering Institute of Canada) as the co-ordinating agency for the accrediting of undergraduate engineering curricula in the United States.

Undergraduate curricula of the College of Engineering and the School of Mines are accredited by the Engineer's Council for Professional Development and include: aerospace, agricultural, chemical, civil, electrical, industrial, mechanical, and mining.

Buildings and Equipment

The *College of Engineering* is located on the Evansdale Campus, approximately a mile from the Downtown Campus and one-half mile from the Medical Center Campus. The main structure of the Engineering Center is a 14-floor building, featuring an 11-story tower on a 3-story base. The Center has been carefully planned to enable the College to accelerate its educational, research, and special programs—all designed to serve the State and the nation.

The *School of Mines* is housed in the Mineral Industries Building on the Downtown Campus.

The *University Hangar.* A steel 150-foot by 87-foot hangar was erected in 1963 to house the University's aircraft and to provide ground training classroom space at Morgantown Municipal Airport. A clear span hangar of 114 feet by 80 feet is provided for storage of aircraft. On one side of the hangar bay are the flight instructor offices, pilot's ready room, classrooms, and machine shop. A separate building, of all-metal construction, for storage of inflammable materials, is located away from the hangar to reduce the fire hazard.

The University houses several aircraft at the University Hangar. These planes are specially equipped for use in aerospace engineering flight test courses and for research purposes.

The *Aerospace Engineering Laboratories* are located on the ground floor of the Engineering Sciences Building and in two separate structures located near the southwest corner of the building. The *Aerospace Structures Laboratory* has an area of 2,600 square feet. It is equipped with a specially designed reinforced floor and test wall for static testing of full-scale aerospace components. Provided in this laboratory are static and dynamic testing machines, and provisions have been made for testing and research at elevated temperatures.

The *Aerodynamics Laboratory Building* contains the wind tunnels and shops of the Department of Aerospace Engineering. The low-turbulence subsonic wind tunnel is used for instruction and research. This wind tunnel, a single-return type, has a test section area of 10 square feet and overall length of 60 feet. It is powered by a 100-horsepower, direct-current motor which provides an infinite range of air speeds from 0 to 200 miles per hour. The subsonic wind tunnel can be readily converted to indraft type operation for tests of a thermodynamic nature.

The steady state supersonic wind tunnel is a continuous flow indraft type with a 4-inch by 5-inch test section. It is powered by three vacuum pumps, each of which is driven by a 150-horsepower synchronous motor. This wind tunnel is designed to operate at a Mach Number of 1.50. It is equipped with a by-pass system which permits model adjustments and model changing without shutting down the entire system. In addition, the laboratory contains a 4-inch by 4-inch "Blow Down" supersonic wind tunnel which has a variable Mach number capability ranging from 1.8 to 4.0. A two-inch shock tunnel is also available for undergraduate instruction and research. This facility is capable of simulating hypersonic flight up to a Mach Number of 12 with rarified atmospheres.

The *Propulsion Laboratory* is located in a separate building near the Engineering Sciences Building. This laboratory is composed of a control room and a combustion cell, the latter having solid concrete walls.

The *Agricultural Engineering Laboratories* are in the Agricultural Engineering Building which contains approximately 30,000 square feet of floor area.

The *electric power and processing laboratory* is one of the best equipped laboratories in the country. Besides a 10/15 h.p. General Electric Dynamometer, it has four large work tables supplied with 120 and 240 volt A.C. circuits and 125 and 250 volt D.C. circuits controlled from a control distribution panel. The D.C. circuits are coupled to two MG sets which are also controlled at the distribution panel.

The *tractor and machinery laboratory* has a 45/60 h.p. General Electric Dynamometer and MG set. Mounted adjacent to it is an International Harvester Company truck machine where students learn internal combustion engine operations. Eventually a 3-drum chassis dynamometer will be connected to the General Electric Dynamometer on which tractors and machinery will be mounted for performance testing. When completed, the chassis dynamometer will be the only one of its kind in any department of agricultural engineering.

The *shop theory and methods laboratory* is well equipped for training future vocational agriculture teachers and other agriculture students desiring to learn shop skills, construction materials, and shop practices.

The *research laboratory* contains a machine shop and welding facilities where research projects are constructed.

The *water systems and hydraulic laboratory* contains two large concrete tanks on which water pumps and systems are mounted for study.

The *instrumentation laboratory* is devoted almost exclusively to research. At present, it serves as the center for instrumentation for research projects.

The *materials testing laboratory* is one of the most promising and unique facilities in agricultural engineering anywhere. Almost all of the department's instruction involving precision instruments and glassware are concentrated in this area. Two fume hoods are used when dusty, obnoxious, or inflammable substances are involved. Other facilities include numerous outlets for electricity, gas, water, steam, and air. A 25,000-pound mechanical testing machine is available.

Other areas in the building include: student lounge and reference room, farm building plan service, visual aids and darkroom, graduate assistants office, conference room, and department and staff offices.

The *Engineering Drawing Rooms* are equipped with up-to-date drawing facilities.

The Department of Mechanical Engineering has devoted a considerable amount of effort to the development of a quite complete *heat transfer laboratory*. Available for both undergraduate and graduate investigation are a guarded hot plate, a guarded hot pipe, environmental rooms, large constant humidity and temperature chambers, emissivity, reflectivity, and transmissibility measuring instruments, heat exchangers, temperature recorders, and instrumentation equipment.

The *Mechanical Engineering Laboratories*, covering 12,000 square feet, contain equipment and facilities for demonstrating, testing and evaluating the many types of systems involved in the interconversion of energy. Modern instrumentation is available for the measurement of such basic properties as mass, pressure, temperature, composition, flow rate, power, etc., under both static and dynamic conditions. Standard calorimeters and viscometers are available for the determination of the heating value of fuels, and the viscosity of lubricants.

The department has a computer facility which includes both field and differential analog types with recording oscillographs. In addition, considerable use is made of the University Computer Center's high-speed digital computer.

The vibration laboratory in *Mechanical Engineering* contains a vibration performance testing machine, a random and harmonic motion excitation system, and an associated array of measuring and recording equipment for vibration and noise analysis.

An experimental machine design laboratory in *Mechanical Engineering* enables students to make use of several modern techniques of stress and strain analysis for determining the strength of machine members. The laboratory contains a complete set of strain gage equipment, stress-coat apparatus, and photostress equipment for static and dynamic loading.

In addition to the above laboratories, the department has a number of specialized laboratories for both undergraduate and graduate research. Students and faculty working together on research projects of mutual interest make use of these facilities to increase their knowledge of the unknown.

A well-equipped machine shop provides an up-to-date facility for fabricating and assembling specialized equipment for the instruction and research laboratories in *Mechanical Engineering*.

The *electrical laboratory* has motor-generator sets which supply direct-current power to meet the special requirements of the laboratories. These motor-generator sets supplement the power available from the local power company.

The *machinery laboratory* has standard types of motors, generators, dynamometers, transformers, loading resistors, reactors, capacitors, and other standard equipment for demonstrating the principle of electrical machinery. Many special types of machines are also available, including special relay demonstration boards.

The *measurement laboratory* has many types of measuring instruments for use in measuring various electrical and magnetic quantities.

The *communications and electronics laboratory* has various electronic devices for testing and demonstrating equipment used in the field of electronics. Some ultra-high frequency equipment is available for microwave demonstration and measurement.

An *Analog Computer Center* has been established by the College of Engineering. The Center is operated by the Department of Electrical Engineering in conjunction with the instructional equipment of the Department. The Center is primarily used for research work of the College.

The Industrial Engineering *motion and time study laboratory* contains time-study watches, motion picture projection equipment, films, viewers and editors, motion picture camera, wink counter, and special timing equipment. A multi-purpose polygraph is available for recording pulse, blood pressure, and respiration. A portable oscillograph, equipped with an amplifier, is also available for research.

The *calculating laboratory* is equipped with modern, versatile machines which provide the student with a means of reaching numerical solutions quickly, thereby allowing more time for theoretical and advance detail study of many problems. Key punches are also available in this laboratory for preparation of computer programs and data.

The *plant layout laboratory* enables the student to participate in a project which provides opportunity for practical application of the work covered in many industrial engineering courses.

The *human factors laboratory* is equipped with apparatus to enable the student to measure many of man's contributions and limitations in man-machine relationships.

The *manufacturing processes laboratories* are equipped to permit instruction to be given regarding metal-manufacturing processes. The laboratory equipment and specific processes include:

1. Basic or general purpose metal-cutting machine tools that permit demonstration of and practice in performing the basic metal-cutting operations of turning, drilling, milling, and planing. A gage laboratory permits non-precision and precision linear and angular measurement of the product.
2. Oxyacetylene welding and cutting, electric arc welding, and heliarc welding equipment permit demonstration and practice in these areas.
3. Foundry equipment for sand testing and bench molding, and a melting furnace for nonferrous metals permit the production of castings.
4. The department has a numerically controlled machine which is to be used for both instruction and research.

The Department of Theoretical and Applied Mechanics specializes in instrumentation for engineering research. Available are transducers for measuring pressure, force, temperature, displacement, etc. Amplifiers, filters and other modifying devices are in use. Various meters, oscilloscopes, magnetic oscillographs, cameras, etc., are available for instructional purposes and research.

The *experimental mechanics laboratories* include complete facilities for large-scale physical testing as well as small research labs for small-scale work. A unique feature of the large *structural laboratory* is a special load floor with a coordinate system of 50,000-pound capacity load points. The primary advantage of such a system is its extreme versatility, which is necessary in education and research. Complete research and instructional facilities are available including photoelastic and complete electric strain gage instrumentation laboratories as well as various small laboratories for individual research projects. Special research laboratories, completely equipped for biomechanics research, are presently in operation with plans for expansion. Various capacity universal and special purpose test machines (torsion, fatigue, hardness, impact, etc.) are also available for student instruction and research.

The Department of Civil Engineering utilizes the facilities of the structural laboratory and is also equipped for class work and research in the other principal areas of civil engineering. A new *concrete laboratory* is fully equipped for the production of test specimens and the study of plain concrete.

In the *hydraulic laboratory* students work together in comparatively small groups studying in three dimensions the configuration of flowing water and the devices for pumping water and measuring its velocity, volume, pressure, and weight which, at best, are unsatisfactorily illustrated in text material. The calculations, which are a part of each report, take on a new and physical meaning. Facilities are available to

study the pumping of water, its energy loss in pipes and various types of meters, open channel flow, weirs, and orifices.

The *sanitary engineering laboratory* is well equipped for student and research work in the fields of water purification and sewage treatment. The aim is to give the student the opportunity to experiment with the physical, chemical, and biological characteristics of water. The degree of purification resulting from various forms of treatment is measured and the cost of the process is determined. Experience in the use of scientific equipment is gained, not as an end in itself, but as a by-product of the study of various forms of treatment on the water or sewage.

The *air pollution control engineering laboratory* is equipped with instruments to enable students to take samples of exhaust gases and dusts from vents and chimneys, and in the atmosphere, both outdoor and indoor. Analyses of the sampled pollutants, and correlation with measurements of the weather, enable students to engage in a wide range of research studies. Students also have access to a major collection of air pollution technical literature that is highly cross-indexed for rapid search and retrieval.

Through cooperation with other departments in the College of Engineering and elsewhere in the University, a wide range of sensitive gas and dust analytical instruments are available, including ultra-violet, infra-red, X-ray diffraction, gas chromatographs, and an electron microscope.

A complete array of *surveying equipment* is available for student use, including transits, levels, plane tables, compasses, tapes, and rods. Problems involving the use of this equipment in the field are designed primarily to help the student understand the underlying theory of surveying rather than to develop skill in the manipulation of instruments.

The *photogrammetry laboratory* is equipped with many of the elementary instruments for making both planimetric and topographic maps from aerial photographs. Available for the use of students who elect this course are stereoscopes, sketchmasters, radial planimetric plotters, stereocomparagraphs, an autofocusing reflecting projector, and a multiplex projector.

Design and drawing rooms are available and are completely equipped with modern facilities. Surveying classes work out graphical and analytical problems here as well as plot and finish maps. Highway design, structures, water supply, sewerage, and photogrammetry all require work in these rooms and they are frequently used by students for general work as well.

The laboratories for *Chemical Engineering* are well equipped for fundamental study and research in the various phases of heat, momentum and mass transfer and in rate processes. The *control laboratory* immediately adjacent is provided with the latest measurement and control instruments and a 45-amplifier analog computer for process dynamics and systems engineering. Special laboratories have been established for such studies as reaction kinetics and thermodynamic properties together with spectrophotometry, mass spectrometry, and chromatography facilities.

The *Materials Science Engineering Laboratories* in adjoining areas are completely equipped for the study of materials comprising metallurgical, ceramic, and synthetic substances used in the various engineering fields. Equipment available for use includes small-scale machinery for preparation of such materials and for microscopic photomicrographic, x-ray diffraction, and radiological examinations. Physical testing equipment is likewise available.

The department is equipped for work in *Nuclear Engineering* on the undergraduate and graduate levels. A swimming pool reactor, a sub-critical reactor, and an electronic reactor simulator are available, and a graphite pile used for neutron studies has been installed. The laboratory is equipped with instruments for detection and measurement of radioactivity. A cobalt 60 source of moderate strength and one of high strength are used to study the effects of gamma radiation on chemical reactions.

The Department of Chemical Engineering also provides large *design and computation laboratories* for performing process calculations and plant layouts with latest modeling materials. The laboratories are serviced by a complete shop operated by a skilled mechanician, a complete materials stock room, and locker and shower facilities for students. Individual research laboratories for graduate students are also provided.

School of Mines Laboratories

The mining laboratories in the Mineral Industries Building are designed to supplement the technical instruction related to the various phases of mining and petroleum engineering and to correlate basic theory and principles with their application in industry.

The *mining laboratory* includes various types of electrical control systems commonly used with modern mining equipment, especially arranged to permit analysis of the electrical circuits and operating principles. Specimens of typical equipment for drilling, cutting, and blasting are included, together with key assembly parts of such units. There also are devices for demonstrating and determining the explosibility of suspended dusts, dust analysis equipment, apparatus for determining dust counts, and models showing methods of working anthracite and bituminous coal and mineral deposits.

The *mine ventilation laboratory* is equipped with centrifugal and multistage axial flow fans, together with the necessary facilities for demonstrating the principles of fluid flow as related to mine ventilation and determination of the performance characteristic of the fans used. A gas testing room is provided for practice and demonstration with flame safety lamps and other gas detection devices. The laboratory is provided with apparatus and facilities for air analysis; and the William Clifford and James T. Beard collection of safety lamps is of particular academic interest as related to the history and development of safe mine lighting.

The *fuels laboratory* is especially equipped for the analysis and study of fuels, with particular emphasis on coal and coke. The equipment includes analytical balances, calorimeters, drying and roasting ovens, fusion furnaces, and special equipment necessary for the proximate and ultimate analysis of coal and the determination of coking and ash fusion characteristics. An X-ray diffraction unit is available for special analytical work.

The *mineral beneficiation laboratory* is outstanding in its facilities for coal testing and in the variety of coal cleaning and preparation equipment provided. The testing equipment includes facilities for screen analysis, float and sink preparation, and the various units required to reduce and prepare samples for laboratory analysis. The coal cleaning equipment available for instructional and research purposes includes a complete range of machines and methods employed in commercial installations for the beneficiation of coal and minerals. The principal cleaning and concentration equipment and methods are represented by self-contained pilot units with auxiliary equipment to permit complete test operation and are in addition to a wide range of individual devices for demonstration and instructional purposes.

The *petroleum and natural gas laboratory* contains a full range of equipment necessary for determination of the chemical and physical properties of oil and gases as related to their use, transmission, and production. Apparatus and facilities are provided for core analysis to determine saturations, porosity, permeability, and grain structure of producing sands, together with diamond core drills and saws for the preparation of samples for such tests. A completely equipped rotary drilling mud laboratory is provided for all types of pilot testing. Also included are various specimens of drilling and other production equipment for instruction and demonstration. The gas measurement section includes bell-types, critical flow, and low pressure flow provers for testing meters of various types. Also provided is a wide range of domestic, orifice, and large capacity displacement meters with the necessary meter runs for their operation.

Special equipment for instruction in *geophysics* is provided, and the School maintains an earth-movement recording seismograph station, operated in accordance with standards approved by the U. S. Coast and Geodetic Survey, for recording earthquakes and the movement of severe storm zones. Portable blast seismic instruments are available for field testing demonstration.

National Societies

Student chapters of several national professional societies are maintained. They include the American Institute of Aeronautics and Astronautics, American Society of Agricultural Engineers, American Institute of Chemical Engineers, American Society of Civil Engineers, The Institute of Electrical and Electronics Engineers, American Institute of Mining, Metallurgical, and Petroleum Engineers, American

Society of Mechanical Engineers, and American Institute of Industrial Engineers. Meetings of the student chapters are held monthly.

The West Virginia Alpha Chapter of *Tau Beta Pi* was installed on June 3, 1922. Tau Beta Pi is the honorary engineering fraternity. Eligible for membership are candidates for the Bachelor of Science Degree in Aerospace, Agricultural, Chemical, Civil, Electrical, Industrial, Mechanical, and Mining Engineering who have maintained a rank in scholarship in the highest one-fifth of the class.

The West Virginia Upsilon Chapter of *Sigma Gamma Epsilon* was installed May 27, 1927. Sigma Gamma Epsilon is an honorary mineral industries fraternity with chapters in thirty of the leading universities. Seniors and juniors in mining engineering and majors in metallurgy and ceramics in chemical engineering who have attained high scholarship rank are eligible for membership.

The West Virginia Theta Chapter of *Omega Chi Epsilon* was installed April 15, 1958. This is an honorary chemical engineering society with chapters in eight leading universities. Junior, senior, and graduate students who have attained high scholastic rank and have demonstrated outstanding traits of character and integrity are eligible for membership.

The West Virginia Pi Gamma Chapter of *Pi Tau Sigma* was installed March 31, 1942. This is an honorary mechanical engineering fraternity with chapters in sixty-seven universities. Seniors and juniors in mechanical engineering who have attained a high scholastic rank are eligible for membership.

The West Virginia Beta Rho Chapter of *Eta Kappa Nu*, national electrical engineering honorary, has qualifications for membership which distinctly stimulate and reward high scholarship. Students in the upper one-fourth of the junior class and the upper one-third of the senior class who have high scholastic standings and good character are eligible for membership. A loan fund is maintained by the local chapter for students enrolled in engineering.

The West Virginia Chapter of *Chi Epsilon* was installed May 14, 1949. This honorary civil engineering fraternity has chapters in fifty-seven colleges and universities. Seniors and juniors in civil engineering who have attained a high scholastic rank are eligible for membership.

The West Virginia Chapter of *Alpha Pi Mu* was installed May 14, 1955. This is an honorary industrial engineering fraternity with chapters in twenty-four universities having accredited curricula. Senior and junior industrial engineering students who have attained high scholastic rank are eligible for membership.

The West Virginia Chapter of *Sigma Gamma Tau* was installed May 21, 1955. This honorary aerospace engineering society has chapters in nineteen leading universities and colleges. The society recognizes and honors juniors and seniors who have through scholarship, integrity, and outstanding achievement been a credit to West Virginia University.

The West Virginia Chapter of *Pi Epsilon Tau* was installed in June, 1964. It is a national honor society for petroleum engineers with chapters in twelve universities. Junior and senior students in petroleum engineering who have high scholastic standings and good character are eligible for membership. A small cash prize and a medal is awarded each year to an outstanding freshman in petroleum engineering at West Virginia University.

STANDING COMMITTEES

Engineering Schedules: Professor E. C. Jones.

Library: Professors Slonneger and Squire; Associate Professor Jenkins.

Committee on Scholarship: Professors M. J. Smith, Baker, and Fairbanks; Assistant Professors Plants and Sandy.

Course Waivers and Substitutions: Dean Arents; Professors Burchinal, Fowler, Genesoy, and R. P. Jones.

Procedures Committee: Professors Weaver and Slonneger; Associate Professor Dubbe.

Graduate Programs Executive Committee: Dean Arents; Professors Butler, Byars, Fanucci, E. C. Jones, Kent, Longhouse, Schaub, Shafer, and Simons; Assistant Professor Luttrell.

Undergraduate Curriculum Committee: Professors E. C. Jones, Baker, and Simons.

Graduate Curriculum Committee: Professors Kemp, Kent, Ness, and Worrell; Associate Professor N. S. Smith.

Requirements for Degrees

Any student, in order to be eligible to receive a Bachelor's degree in any branch of engineering for which degrees are offered, in addition to satisfying all entrance requirements, shall be required to complete satisfactorily the number of semester hours of work as specified in the curriculum of the department leading to the degree for which the student is a candidate, plus the general requirements of physical education, military science or Air Force Aerospace Studies, and English proficiency by the University for such a degree.

A grade of "C" or better must be attained in each mathematics course before registration in a subsequent mathematics course is allowed.

THE COLLEGE OF ENGINEERING CURRICULA

The several four-year curricula are set up to give, in the first two years, a well-rounded training in the basic sciences of mathematics, chemistry, and physics, and in English.

This is followed by such technical subjects as mechanics, thermodynamics, and electricity. The degree of emphasis varies somewhat with the curriculum followed. These courses bridge the gap between the pure sciences and the professional courses. In addition, courses in the humanities are given throughout the four years.

In the third and fourth years, special emphasis is placed on the professional work of the engineer. In these years a certain number of credit hours are available for electives.

The curricula are:

1. A four-year curriculum leading to the degree of Bachelor of Science in Aerospace Engineering.
2. A four-year curriculum leading to the degree of Bachelor of Science in Agricultural Engineering.
3. A four-year curriculum leading to the degree of Bachelor of Science in Chemical Engineering.
4. A four-year curriculum leading to the degree of Bachelor of Science in Civil Engineering.
5. A four-year curriculum leading to the degree of Bachelor of Science in Electrical Engineering.
6. A four-year curriculum leading to the degree of Bachelor of Science in Industrial Engineering.
7. A four-year curriculum leading to the degree of Bachelor of Science in Mechanical Engineering.
8. Combined science and engineering curricula extending over five or more years leading to the Degree of Bachelor of Science and Bachelor of Science in Engineering.

Plan for Numbering Courses

For convenience it is customary to designate the course of study by the name of the department or group of departments and the number of the particular course. Whenever reference is made to engineering courses in the course announcements and textual matter, the department or groups will be indicated as follows:

Aerospace Engineering	A.E.	Materials Science Engineering	Mat.E.
Agricultural Engineering	Ag.E.	Nuclear Engineering	Nuc.E.
Chemical Engineering	Ch.E.	Theoretical and Applied Mechanics	T.A.M.
Civil Engineering	C.E.	Mining Engineering	E.M.
Electrical Engineering	E.E.	Petroleum Engineering	Pet.E.
Industrial Engineering	I.E.	General	G.
Mechanical Engineering	M.E.		

The plan for numbering courses is as follows:

Courses 1 to 99—intended primarily for freshmen and sophomores.
Courses 100 to 199—junior and senior courses not open to graduates.
Courses 200 to 299—advanced courses for juniors, seniors, and graduates.

Classification of Students

To be classified as a freshman in the College of Engineering or the School of Mines, a student must have credit for at least 15 units of entrance requirements. To be classified as a sophomore he must have credit toward his degree for 30 hours; as a junior 68 hours; as a senior 100 hours; except that a student who is a candidate for the degree of Bachelor of Science to be classified as a sophomore must have credit for 27 hours of college work, as a junior, 60 hours, as a senior, 94 hours.

CURRICULUM IN AEROSPACE ENGINEERING

Degree: Bachelor of Science in Aerospace Engineering

Aerospace Engineering embraces the science and technology of all vehicles which are not bound to the earth. This includes all types of aircraft, rockets, missiles, and spacecraft, whether flight takes place in the atmosphere or beyond it.

The Aerospace Engineering Curriculum includes the disciplines encountered in the design of all of these vehicles. In addition to aerodynamics and structures, the aerospace engineer must now be familiar with propulsion systems and control and guidance systems. The curriculum may serve as a terminal program by incorporating design oriented courses for the technical electives, or it may be used as a preparatory program for advanced study by the selection of science oriented courses for these technical electives.

Aerospace Engineering theory and laboratory courses are scheduled in the curriculum to complement each other, so that the greatest benefit may be derived from both. The laboratory courses also provide the students with the opportunity to become familiar with modern laboratory instrumentation and research methods.

The Department of Aerospace Engineering operates seven major facilities.

Subsonic Wind Tunnel—A 200 mph low-turbulence wind tunnel is used for research and to supplement lecture courses in theoretical and applied subsonic aerodynamics.

Supersonic Wind Tunnels—A Mach 1.50 continuous-flow indraft-type wind tunnel is used for research and instruction, particularly at the graduate level. A variable Mach number "Blow Down" tunnel capable of Mach numbers up to four is also available.

Shock Tunnel—A two-inch shock tunnel capable of simulating hypersonic flight at rarified atmospheres is available for undergraduate instruction and research.

Aerospace Structure Laboratory—To complement classroom work dealing with the theory of aerospace vehicle structural analysis and for research.

Design Laboratory—For third- and fourth-year courses in detail, aerodynamic, and structural design of aircraft, missile and space vehicles.

Propulsion Laboratory—For undergraduate and graduate electives in this area.

Flight Test Laboratory—A Cessna Super Sky Wagon and a Cessna Model 150 are used as flying laboratories for instruction and research in flight testing. These planes are housed at the University Hangar.

FIRST YEAR AEROSPACE ENGINEERING

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 15—Fund. of Chem.	4	Chem. 16—Fund. of Chem.	4
English 1—Comp. and Rhet.	3	English 2—Comp. and Rhet.	3
G. 1—Engineering Lectures	Cr.	Math. 16—Calculus	4
Math. 15—Calculus	4	Physics 11—General Physics	4
M.E. 20—Eng'g. Draw. & Graphics	3	Mil. Sci. 2 or A.S. 2	2
Mil. Sci. 1 or A.S. 1	2	Phys. Ed. 2—General Program	1
Phys. Ed. 1—General Program	1		
	17		18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Non-Technical Elective	3	Non-Technical Elective	3
Math. 17—Calculus	4	Math. 140—Diff. Equations	3
Physics 102—General Physics	4	Physics 124—Intro. to Mod. Physics	4
Speech 11—Public Speaking	3	T.A.M. 102—Mech. of Materials I	3
T.A.M. 101—Statics	3	T.A.M. 104—Dynamics	3
Mil. Sci. 3 or A.S. 3	2	Mil. Sci. 4 or A.S. 4	2
	19		18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
A.E. 116—Intro. to Flight Veh.	3	A.E. 209—Flight Mechanics	3
A.E. 201—Fluid Dynamics I	4	A.E. 210—Flight Veh. Struc. I	3
Math. elective	3	A.E. 223—Fluid Dynamics II	3
M.E. 120—Eng'g. Thermodynamics	3	E.E. 105—Electrical Fund.	4
Non-technical elective	3	English 126—Adv. Comp.	3
T.A.M. 103—Mech. of Materials II	3	Non-technical elective	3
	19		19

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
A.E. 205—Exp. Fluid Dynamics	2	A.E. 213—Exp. Flight Veh. Struc.	1
A.E. 207—Flight Veh. Design	3	Mat.E. 250—Mat'l. Sci. Eng'g.	3
A.E. 211—Flight Veh. Struc. II	3	M.E. 230—Heat Transfer	3
A.E. 224—Flight Veh. Propulsion	3	Non-technical elective	3
E.E. 205—Electronic Fund.	4	Technical electives	6
Inspection Trip	Cr.		
Non-technical elective	3		
	18		16

Six semester credit hours of non-technical electives must be selected from Group A of the Core Curriculum.

The remaining 12 hours of non-technical electives must be selected from the following list of subjects: Sociology, Philosophy, History, Political Science, Psychology, and Economics. The 12 semester credit hours must consist of at least three of these subjects.

Technical electives must be selected from Aerospace Engineering courses in the 200 series or from advanced mathematics.

CURRICULUM IN AGRICULTURAL ENGINEERING

Degree: Bachelor of Science in Agricultural Engineering

Agricultural Engineering is the application of engineering principles to agriculture. Success in the application of engineering fundamentals to the agricultural industry requires knowledge of both the biological and physical sciences. The purpose of the course is to give the student general training in agricultural and engineering fundamentals. Considerable stress is given to basic requirements of plant and animal life which affect engineering practices, but greater emphasis is placed on a thorough knowledge of those underlying principles and methods which are the foundation of all the engineering professions.

Although the curriculum gives no opportunity for specialization, Agricultural Engineering is made up of four major fields. These are: Farm Power and Machinery, Farm Structures, Soil and Water Conservation, and Electric Power and Processing.

Students preparing to take Agricultural Engineering should present for entrance as many units as possible in mathematics, chemistry, and physics.

Some of the organizations and industries employing agricultural engineers are electric power companies and cooperatives; farm machinery manufacturers and dis-

tributors; manufacturers and distributors of building materials; oil companies; electric equipment and other suppliers of farm utilities; trust companies; farm management agencies; federal agencies such as Soil Conservation Service, U. S. Department of Agriculture, Federal Land Bank, and Indian Service; colleges and universities; Army and Navy, and foreign governments.

FIRST YEAR AGRICULTURAL ENGINEERING

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1—Comp. and Rhet.	3	English 2—Comp. and Rhet.	3
Chem. 15—Inorganic	4	Chem. 16—Inorganic	4
Math. 15—Calculus	4	Math. 16—Calculus	4
M.E. 20—Eng. Draw. & Graphics	3	Physics 11—General	4
Mil. Sci. 1 or A.S. 1	2	Mil. Sci. 2 or A.S. 2	2
P.E. 1—General Program	1	P.E. 2—General Program	1
	17		18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Biological Sci. Elective	4	Agronomy 2—Soils	4
Physics 102—General	4	Physics 124—Intro. to Mod. Phy.	4
Math. 17—Calculus	4	Math. 140—Diff. Equations	3
T.A.M. 101—Statics	3	T.A.M. 102—Mech. of Materials I	3
Mil. Sci. 3 or A.S. 3	2	M.E. 121—Thermodynamics	3
		Mil. Sci. 4 or A.S. 4	2
	17		19

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Ag. Eng. 230—Farm Power	3	Ag. Eng. 201—Agr. Structures	3
M.E. 109—Mechanisms	2	C.E. 115—Fluid Mechanics	3
Econ. 51—Principles	3	M.E. 126—Engr. Draw. & Graphics	2
E.E. 105—Elec. Fundamentals	4	Econ. 52—Principles	3
T.A.M. 103—Mech. of Mat. II	3	C.E. 1—Surveying	2
T.A.M. 104—Dynamics	3	Eng. Science Elective	3
		Group A Elective	3
	18		19

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
AI & VS 51—Prin. of An. Sci. *or*		Ag. Eng. 290—Prin. of Mach. Des.	3
Agr. 52—Prin. of Plant Sci.	4	Ag. Eng. 210—Application of Elec. to Agriculture *or*	
Ag. Eng. 240—Hydrology *or*			
Ag. Eng. 250—Soil & Water	3	Ag. Eng. 220—Processing	3
M.E. 201—Des. of Mach. Members	3	English 126—Adv. Comp. *or*	
Group A Elective	3	Speech 11—Public Speaking	3
Ag. Econ. Elective	3	Group B Elective	6
Elective	3	Elective	3
	19		18

CURRICULUM IN CHEMICAL ENGINEERING

Degree: Bachelor of Science in Chemical Engineering

The four-year course in Chemical Engineering has been developed to qualify graduates for positions in operation, development, design, construction, and management of manufacturing plants in which raw materials are subjected to chemical and physical changes to produce economically desirable products.

The first two years of the curriculum includes, in addition to courses in composition and rhetoric, basic mathematics through differential equations, inorganic and physical chemistry, classical and modern physics, and elementary mechanics. Courses in the humanities serve to introduce the social-humanistic stem which continues throughout the remainder of the curriculum.

The third year includes organic chemistry and engineering sciences comprising chemical engineering fundamentals of momentum, mass and heat transfer, thermodynamics and reaction kinetics, and electrical fundamentals.

The fourth-year senior block introduces the student to the actual practice of chemical engineering including analysis, synthesis and design centered around a comprehensive plant design project, process dynamics, design of experiments, nature and mechanics of materials, and professional practice and ethics. Associated with this block is a written and oral communications sequence, together with similar sequences in the humanistic-social stem and in technical electives.

FIRST YEAR CHEMICAL ENGINEERING

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1—Comp. and Rhet.	3	English 2—Comp. and Rhet.	3
Chem. 17—Princ. of Chem.	5	Chem. 18—Princ. of Chem.	5
G. 1—Engineering Lectures	Cr.	Math. 16—Calculus	4
Math. 15—Calculus	4	Physics 11—General Physics	4
Mil. Sci. 1 or A.S. 1	2	Mil. Sci. 2 or A.S. 2	2
Phys. Ed. 1—General Program	1	Phys. Ed. 2—General Program	1
	15		19

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Math. 17—Calculus	4	Math. 140—Diff. Equations	3
Chem. 143—Physical Chem.	3	Chem. 144—Physical Chem.	3
Humanities 1	3	Humanities 2	3
Physics 102—General Physics	4	Physics 124—Intro. to Mod. Physics	4
T.A.M. 101—Statics	3	T.A.M. 104—Dynamics	3
Mil. Sci. 3 or A.S. 3	2	Mil. Sci. 4 or A.S. 4	2
	19		18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Math. elective	3	E.E. 105—Electrical Funds.	4
Hum. Soc. (elective)	3	Hum. Soc. (elective)	3
Hum. Soc. (elective)	3	Hum. Soc. (elective)	3
Chem. 133—Organic Chem.	3	Chem. 134—Organic Chem.	3
Chem. 135	1	Chem. 136	1
	13		14

JUNIOR BLOCK

Ch.E. 201—Ch.E. Funds.	3	Ch.E. 202—Ch.E. Funds.	3
Ch.E. 242—Thermo. & Kin.	3	Ch.E. 243—Thermo. & Kin.	3
	19		20

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Tech. elective	3	Tech. elective	3
English 126—Adv. Comp.	3	Speech 11—Public Speaking	3
Hum. Soc. (elective)	3	Hum. Soc. (elective)	3
	9		9

SENIOR BLOCK

Ch.E. 270—Ch.E. Prif. Block	9	Ch.E. 271—Ch.E. Prof. Block	9
	18		18

CURRICULUM IN CIVIL ENGINEERING

Degree: Bachelor of Science in Civil Engineering

The civil engineering curriculum has been planned to give a broad coverage of those general and scientific subjects that form the foundation of all engineering and special training in the civil engineering field. General subjects are included in all semesters of the four-year program. These are intended to improve and enrich the student's understanding of man's relation to man and they have been classified as communications, humanities, and social consciousness courses. In addition to drawing, physics, and mathematics, which form the roots of any engineering course, the student investigates such fields as chemistry and geology which give a breadth of scientific training.

A comprehensive study of earth measurements and survey engineering is scheduled for the summer following the first year. Training at the professional level in photogrammetry and geodesy may be elected during the fourth year to round out this work.

Courses in theoretical and applied mechanics, thermodynamics, and electrical engineering furnish breadth of training in engineering subjects and depth of training comes from professional work in transportation, structural and sanitary engineering, and soil mechanics, any of which may be the specialty of the civil engineer.

The civil engineering professional field is too broad to be covered thoroughly in a four-year course. For this reason, primary emphasis is placed on engineering fundamentals. A degree of professional specialization is still possible, however. The student, during his last year, may select specialized courses in the fields of transportation, sanitary engineering, structural engineering, or soil mechanics.

The State Road Commission of West Virginia and the Department of Civil Engineering offer a cooperative program in which the student divides his time between formal education and practical experience. One or more semesters are spent each year pursuing the regular Civil Engineering curriculum in school and for the remainder of the time the trainee is employed by the State Road Commission, where all possible advantage is taken of the engineering theory which he has studied. The student's pace through the curriculum is determined primarily by his financial position. Upon successful completion of the program, the regular B.S.C.E. degree is granted and the trainee is offered an engineering position with the State Road Commission.

FIRST YEAR CIVIL ENGINEERING

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 15—Fund. of Chem.	4	Chem. 16—Fund. of Chem.	4
English 1—Comp. and Rhet.	3	English 2—Comp. and Rhet. *or*	3
G. 1—Engineering Lectures	Cr.	M.E. 20—Eng'g. Draw. & Graphics	
Math. 15—Calculus	4	Math. 16—Calculus	4
M.E. 20—Eng'g. Draw. & Graphics *or*		Physics 11—General Physics	4
Non-technical elective	3	Mil. Sci. 2 or A.S. 2	2
Mil. Sci. 1 or A.S. 1	2	Phys. Ed. 2—General Program	1
Phys. Ed. 1—General Program	1	C.E. 100—Intro. to Civil Eng'g.	1
	17		19

SUMMER

C.E. 102—Survey Engineering (five weeks) 6

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Non-technical Elective *or* English 2—Comp. and Rhet.	3	Non-Technical Elective	3
Math. 17—Calculus	4	Math. 140—Diff. Equations	3
T.A.M. 101—Statics	3	T.A.M. 102—Mech. of Materials I	3
Physics 102—General Physics	4	T.A.M. 104—Dynamics	3
Mil. Sci. 3 or A.S. 3	2	Physics 124—Modern Physics	4
		Mil. Sci. 4 or A.S. 4	2
	16		18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
C.E. 115—Fluid Mechanics	3	C.E. 146—Sanitary Eng'g. I	3
C.E. 131—Highway Eng'g.	4	C.E. 160—Structural Analysis I	5
Geol. 1—General Geology	3	C.E. 280—Soil Mechanics	3
M.E. 121—Thermodynamics	3	E.E. 105—Electrical Fund.	4
T.A.M. 103—Mech. of Materials II	3	Non-technical elective	3
Non-technical elective	3		
	19		18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
C.E. 147—Sanitary Eng'g. II	3	C.E. 221—Eng'g. Hydraulics	3
C.E. 260—Struct. Analysis II	3	C.E. 271—Struct. Design II	3
C.E. 270—Struct. Design I	3	English 126—Adv. Composition *or* Speech 11—Public Speaking	3
Mat.E. 250—Mat'ls. Sci. Eng'g.	3	Non-technical elective	3
Non-technical elective	3	Science or Eng'g. Sci. elective	3
Technical elective	3	Technical elective	3
	18		18

Six hours of a modern foreign language may be taken in place of English 126 or Speech 11. However, English 126 will be required if the average grade in English 1 and 2 is "C" or less.

Technical electives must include at least one course in Civil Engineering.

Non-technical electives must be selected from the areas of social sciences and humanities.

CURRICULUM IN ELECTRICAL ENGINEERING

Degree: Bachelor of Science in Electrical Engineering

The course in electrical engineering has been developed for the purpose of giving the student who completes the course general training in engineering fundamentals and broad training in the field of electrical engineering. Special training in the electrical power field or the communications field is available as electives in the senior year.

In the first two years of electrical engineering, the work is limited mostly to those subjects which are essential as preparatory courses for the more technical courses in the third and fourth years.

During the third year, fundamental courses in electrical engineering are introduced. Two courses in modern physics are included.

In the fourth year the curriculum is mainly courses in electrical engineering, and electives, non-technical electives to help satisfy the University Core Curriculum, technical electives to offer courses of special interest to the student and an advanced mathematics elective. These electives will be of special interest to students planning to enter graduate school.

FIRST YEAR ELECTRICAL ENGINEERING

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 15—Fund. of Chem.	4	Chem. 16—Fund. of Chem.	4
English 1—Comp. and Rhet.	3	English 2—Comp. and Rhet. *or*	
G. 1—Engineering Lectures	0	M.E. 20—Eng'g. Draw. & Graph.	3
Math. 15—Calculus	4	Math. 16—Calculus	4
M.E. 20—Eng'g. Draw. & Graphics *or*		Physics 11—General Physics	4
Non-technical elective	3	Mil. Sci. 2 or A.S. 2	2
Mil. Sci. 1 or A.S. 1	2	Phys. Ed. 2—General Program	1
Phys. Ed. 1—General Program	1		
	17		17

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Non-Technical Elective *or*		Non-Technical Elective	3
English 2—Comp. and Rhet.	3	E.E. 25—Electrical Circuits I	4
Math. 17—Calculus	4	Math. 140—Diff. Equations	3
Physics 102—General Physics	4	Physics 125—Intro. to Mod. Physics	3
T.A.M. 101—Statics	3	T.A.M. 104—Dynamics	3
Mil. Sci. 3 or A.S. 3	2	Mil. Sci. 4 or A.S. 4	2
	16		18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Econ. 51—Principles	3	Econ. 52—Principles	3
E.E. 125—Electrical Circuits II	4	E.E. 152—Electronics I	4
E.E. 126—Electric & Mag. Fields I	3	E.E. 225—Electric Circuits III	4
English 126—Adv. Comp.	3	E.E. 226—Electric & Mag. Fields II	3
Physics 126—Intro. to Mod. Physics	3	Non-technical electives	3
T.A.M. 102—Mech. of Materials I	3		
	19		17

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
E.E. 200—Seminar	0	C.E. 115—Fluid Mechanics	3
E.E. 232—Electromechanical Dev. I	4	E.E. 233—Electromechanical Dev. II	4
E.E. 251—Electronics II	3	E.E. 252—Electronics III	3
Math. elective	3	E.E. 270—Eng'g. Analy. & Design	3
M.E. 121—Thermodynamics of Eng'g.	3	Technical electives	6
Non-technical electives	3		
Technical electives	3		
	19		19

Electives

Non-technical electives shall be selected from courses approved for University Core Curriculum requirements.

Six hours of a modern foreign language may be taken in place of English 126. English 126 will be required if the average grade in English 1 and 2 is "C" or less.

Technical electives shall be selected from the following: Advanced Mathematics, Advanced Physics, or an engineering course in the 200 series.

NOTE: Students enrolled in the Department of Electrical Engineering will not be allowed to register in any Electrical Engineering course unless they have obtained a grade of "C" or better in all its prerequisite Electrical Engineering courses.

To be eligible for graduation, a student enrolled in the Department of Electrical Engineering must attain a passing grade in all electrical engineering courses for which he has registered, except for courses with grades of "W" and "WP".

CURRICULUM IN INDUSTRIAL ENGINEERING

Degree: Bachelor of Science in Industrial Engineering

Industrial Engineering is a relatively new branch of engineering. The industrial engineer must combine his knowledge of engineering principles with everyday manufacturing operations in order that the product be produced in sufficient quantities at minimum cost. The field of the industrial engineer is that of the process, production, and cost expert engaged in planning, organizing, improving, managing, and operating the various procedures in producing all kinds of manufactured products.

The purpose of the curriculum in industrial engineering is to provide training for those students who are interested in the managerial and technical activities of the engineering field. Industrial engineering is, basically, engineering with its foundation in mathematics and the sciences, with emphasis upon the human factors and the economic aspects which are essential in engineering work.

There are many new problems challenging industry. Industrial engineers are being called upon more and more to answer this challenge. Their job is to coordinate man, machine, and method into a smooth-running organization.

The first and second years are devoted to basic courses in English, mathematics, chemistry, physics, statics, mechanics of materials, graphics, and manufacturing processes which are essential to the more technical courses which follow in the third and fourth years.

Industrial engineering includes motion and time study analysis for work simplification and standardization, control of quality, control of quantity through use of production control techniques, and control of labor costs through use of such management activities as job evaluation and wage incentives.

The laboratories provide the student with practice in the various phases of industrial engineering. Facilities are also available for research and development of methods and procedues for manufacture and control.

Besides giving the engineering fundamentals, industrial engineering provides for basic course work in the fields of mechanical and electrical engineering. The studies provide for intensive training in the various branches of industrial engineering. The specialization courses starting in the junior year are planned for progressive instruction in the principles and techniques of industrial engineering as practiced in industry.

Statistics has been increasing steadily as a tool in industrial engineering. One of its greatest contributions in recent years has been in the control of quality of manufactured products by statistical method. Recent additions to the curriculum prepare students for more advanced statistical analysis, as may be applied to production and costs as well as research.

FIRST YEAR INDUSTRIAL ENGINEERING

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 15—Fund. of Chem.	4	Chem. 16—Fund. of Chem.	4
English 1—Comp. and Rhet.	3	English 2—Comp. and Rhet.	3
G. 1—Engineering Lectures	Cr.	Math. 16—Calculus	4
M.E. 20—Eng'g. Draw. and Graphics	3	Physics 11—General Physics	4
Math. 15—Calculus	4	Mil. Sci. 2 or A.S. 2	2
Mil. Sci. 1 or A.S. 1	2	Phys. Ed. 2—General Program	1
Phys. Ed. 1—General Program	1		
	17		18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Econ. 51—Principles	3	Econ. 52—Principles	3
Non-Technical Elective	3	Non-Technical Elective	3
Math. 17—Calculus	4	Math. 140—Diff. Equations	3
Physics 102—General Physics	4	Physics 124—Modern Physics	4
T.A.M. 101—Statics	3	T.A.M. 104—Dynamics	3
Mil. Sci. 3 or A.S. 3	2	Mil. Sci. 4 or A.S. 4	2
	19		18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
E.E. 105—Electrical Fund.	4	E.E. 205—Electrical Fund.	4
I.E. 100—Mfg. Processes	3	I.E. 110—Tool Design	3
I.E. 140—Motion & Time Study	3	I.E. 131—Fund. of I.E.	3
I.E. 281—Digital Comp. for Eng'g.	3	I.E. 151—Acct. fir Engr's.	3
I.E. 244—Eng'g. Statistics	3	I.E. 214—Adv. Anal. Eng'g. Data	3
T.A.M. 102—Mech. of Materials I	3	M.E. 121—Thermodynamics	3
	19		19

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
C.E. 115—Fluid Mechanics	3	I.E. 256—Intro. to Systems Eng'g.	1
I.E. 142—Prod. Control	3	I.E. 294—Std. Mfg. Costs	3
I.E. 254—Intro. Oper. Research	3	Pol. Sci. 101—Intro. to Gov't.	3
I.E. 287—Eng'g. Economy	3	*Speech 11—Public Speaking	3
I.E. 290—Ind. Stat.	2	**Electives—I.E. Technical	6
Mat.E. 250—Mat. Sci. Eng'g.	3	***Elective—Non-Technical	3
	17		19

*Either Speech 11 or English 126 may be taken.

**Elective (I.E. Technical) must be taken from any of the Industrial Engineering courses listed in the Courses of Instruction.

***Elective (Non-Technical) must be selected from psychology, philosophy, economics, or sociology. The course selected must satisfy the University Core Curriculum requirements.

A student wishing to specialize in Operations Research should take 6 hours of I.E. Technical Electives from the following list of courses: I.E. 215, I.E. 253, I.E. 284, Math. 257, and Math. 258.

CURRICULUM IN MECHANICAL ENGINEERING

Degree: Bachelor of Science in Mechanical Engineering

Mechanical Engineering is a profession in which its members work creatively to achieve practical results in terms of products and services that people need or want. These products may be aircraft engines or power lawn mowers, nuclear power plants or air conditioning systems, rocket engines or interplanetary space vehicles. The services may include consulting engineering, management, and teaching. In view of the wide range of products and services encompassed by Mechanical Engineering, it is not surprising that Mechanical Engineers find employment in a wide range of industries, as well as government agencies and educational institutions. It is thus very important that the Mechanical Engineering curriculum prepare students to deal effectively with a broad range of engineering problems, rather than narrow specialties.

Mechanical engineers, while strongly oriented toward science, are not scientists. They must deal with reality in all its aspects and must be competent to use classical as well as the most modern parts of science together with empirical knowledge and ingenuity to effectively practice their profession. The ability to make acceptable compromises between the often conflicting demands of scientific rigor and economic necessity, deadlines and perfection, high efficiency and reliability requires the maturity of a highly educated mind. The curriculum in Mechanical Engineering is designed to prepare students to this end and may be conveniently divided into four main parts, including courses in (a) mathematics, chemistry, physics, and English, which form the foundation of all engineering activity, (b) humanities and liberal studies, which help to develop social consciousness and a sense of proportion, (c) the engineering sciences, such as thermodynamics and vibration theory, which extend the basic sciences to practical levels, (d) professional engineering subjects, such as machine, process and systems design, which emphasize the professional approach to project engineering rather than the acquisition of specialized knowledge or skills.

Well-equipped laboratories are provided to supplement classroom instruction and to furnish a means of teaching experimental methods. The student is provided with the opportunity to observe and explain phenomena, to test theories and to interpret results. An opportunity is also provided for the student to elect a number of courses, some of which may involve individual study or research.

While the undergraduate curriculum is sufficiently broad to permit the graduate to select from a wide variety of employment opportunities, at the same time it contains sufficient depth to prepare a student to enter graduate school to seek an advanced degree. As modern science and engineering become ever more complex, the desirability of graduate levels of preparation is being recognized by most advanced industries and government agencies. Students who develop an interest in engineering research or in academic teaching should plan to continue their education through the M.S. or Ph.D. level.

FIRST YEAR MECHANICAL ENGINEERING

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
G. 1—Engineering Lectures	0	Math. 16—Calculus	4
Chem. 15—Fund. of Chem.	4	Chem. 16—Fund. of Chem.	4
Math. 15—Calculus	4	English 2 *or*	
English 1—Comp. and Rhet.	3	M.E. 20—Eng'g. Graphics	3
M.E. 20—Eng'g. Graphics *or*		Physics 11—General Physics	4
Non-Technical Elective	3	Phys. Ed. 2—General Program	1
Phys. Ed. 1—General Program	1	Mil. Sci. 2 or A.S. 2	2
Mil. Sci. 1 or A.S. 1	2		
	17		18

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Math. 17—Calculus	4	Math. 140—Diff. Equations	3
Physics 102—General Physics	4	Non-Technical Electives	3
T.A.M. 101—Statics	3	T.A.M. 102—Mech. of Materials I	3
English 2 *or*		T.A.M. 104—Dynamics	3
Non-Technical Elective	3	Physics 124—Intro. to Mod. Physics	4
Mil. Sci. 3 or A.S. 3	2	Mil. Sci. 4 or A.S. 4	2
	16		18

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
T.A.M. 103—Mech. of Materials II	3	E.E. 205—Eectrical Fund.	4
I.E. 100—Mfg. Processes	3	C.E. 115—Fluid Mechanics	3
E.E. 105—Electrical Fund.	4	M.E. 112—Dynamics of Mach.	3
M.E. 109—Mechanisms	2	M.E. 125—Thermodynamics	3
M.E. 120—Thermodynamics	3	M.E. 126—Graphics II	2
English 126—Technical Writing *or*		M.E. 132—Mech. Lab.	2
Speech 11—Public Speaking	3		
	18		17

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
M.E. 201—Design of Mach. Members	3	M.E. 203—Machine Design	3
M.E. 228—Mech. Lab.	1	I.E. 244—Statistics *or*	
M.E. 230—Heat Transmission	3	I.E. 287—Eng'g. Economy	3
Mat.E. 250—Materials Science	3	Technical electives	6
Technical elective	3	Non-technical electives	6
Non-technical electives	6		
	19		18

NOTE: Six hours of technical electives must be taken from Mechanical Engineering courses. The 18 hours of non-technical electives must be selected to meet University Core Curriculum requirements.

GRADUATE WORK

For information on graduate programs in the following areas, see the current Graduate School *Announcements*.

AEROSPACE ENGINEERING
AGRICULTURAL ENGINEERING
AIR POLLUTION CONTROL
CHEMICAL ENGINEERING
CIVIL ENGINEERING
ELECTRICAL ENGINEERING
FOREST ENGINEERING
HIGHWAY ENGINEERING
INDUSTRIAL ENGINEERING
MATERIALS SCIENCE ENGINEERING
MECHANICAL ENGINEERING
NUCLEAR ENGINEERING
SANITARY ENGINEERING
SOIL MECHANICS
STRUCTURAL ENGINEERING
THEORETICAL AND APPLIED MECHANICS
TRANSPORTATION PLANNING AND TRAFFIC

The School of Mines

CURRICULA IN THE SCHOOL OF MINES

The following engineering curricula are offered in the School of Mines.

1. A four-year curriculum leading to the Degree of Bachelor of Science in Engineering of Mines.
2. A four-year curriculum leading to the Degree of Bachelor of Science in Petroleum Engineering.
3. A combined science and engineering curricula leading to the degree of Bachelor of Science and Bachelor of Science in Engineering of Mines or Bachelor of Science in Petroleum Engineering.

In the four-year curricula the first two years of instruction are alike. During this period the student is given a thorough grounding in mathematics, physics, chemistry, English composition, and geology, as well as an introduction to history and economics. During the third and fourth years the student is given instruction in the engineering sciences as well as in the professional subjects pertaining to mining engineering and petroleum and natural gas engineering. Also, studies in the humanities are continued with the student being permitted to elect a reasonable proportion of the subjects to be studied.

CURRICULUM IN ENGINEERING OF MINES

Degree: Bachelor of Science in Engineering of Mines

Mining Engineering deals with discovering, extracting, beneficiating, marketing, and utilizing minerals from the earth. The role of the mining engineering is quite diversified and there are opportunities for technical specialization in prospecting, development, production, beneficiation, utilization, and marketing. Therefore, the mining engineer must be well trained in the fields of mining and geology and also in the principles of civil, electrical, and mechanical engineering as applied to the mining industry. With the present trend toward the use of engineers in industrial management and administrative positions, the mining engineer's training must also include economics, business, personnel management, and the various humanities.

In this curriculum professional study includes geology and the engineering principles of blasting, materials handling, transportation, hoisting, water control, surface and underground systems of mining, roof control, ventilation, mineral preparation, and plant design. Special consideration is given to the application of mining machinery with particular attention to power transmission and electric and hydraulic control systems.

Special courses in the design of surface and underground mining installations give the student opportunity for using the engineering principles developed in preceding phases of the course as well as for specialization. The student receives an introduction to the management and social aspects through courses devoted to economic, social, governmental, labor, financial, and safety problems incident to the operation of a mining enterprise.

In the fourth year the student may specialize in coal mining, ore mining, or other phases of mining engineering by proper selection of design problems and electives. He will be assigned an adviser who will assist him in this phase of the program.

Local coal fields, mines, and preparation plants are used extensively for experimental, instructional, and field work.

FIRST YEAR ENGINEERING OF MINES

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 15—Fund. of Chem.	4	Chem. 16—Fund. of Chem.	4
English 1—Comp. and Rhet.	3	English 2—Comp. and Rhet.	3
E.M. 1—Freshman Orientation	0	Math. 16—Calculus	4
Math. 15—Calculus	4	Geol. 1—Physical Geology	3
Hist. 1—World Civilization	3	Mil. Sci. 2 or A.S. 2	2
Mil. Sci. 1 or A.S. 1	2	Phys. Ed. 2—General Program	1
Phys. Ed. 1—General Program	1		
	17		17

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Physics 11—General Physics	4	Physics 102—General Physics	4
Math. 17—Calculus	4	Math. 140—Adv. Appl. Math.	3
Hist. 2—World Civilization	3	T.A.M. 101—Statics	3
Chem. 141—Physical Chem.	4	Econ. 51—Principles	3
E.M. 106—Mineralogy	2	English 5—American Lit.	3
Mil. Sci. 3 or A.S. 3	2	Mil. Sci. 4 or A.S. 4	2
	19		18

SUMMER

E.M. 102—Mine Surveying (5 weeks) 5

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Geol. 151—Structural Geology	3	E.M. 209—Mineral Prep.	3
Physics 124—Intro. to Mod. Physics	4	E.E. 105—Electrical Fund.	4
Econ. 52—Principles	3	Mat.E. 250—Mat. Sci. Eng'g.	3
C.E. 115—Fluid Mechanics	3	T.A.M. 102—Strength of Materials	3
T.A.M. 104—Dynamics	3	E.M. 212—Advanced Mining	3
E.M. 108—Fund. of Mining	4	**Non-technical elective	3
	20		19

**Non-technical electives must be selected from the following fields: Art, Foreign Languages, Humanities, Music, Philosophy.

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
I.E. 244—Eng'g. Statistics	3	E.M. 220—Mine Design	3
E.E. 205—Electrical Fund.	4	E.M. 222—Mine Equip. and Mach.	3
M.E. 121—Thermo. of Eng'g.	3	E.M. 223—Mine Management	3
E.M. 213—Mine Ventilation	3	English 6—American Lit.	3
E.M. 241—Mechanics of Ground Control in Mines	3	G. 100—Inspection Trip	0
		Technical elective	3
***Technical elective	3	**Non-technical elective	3
	19		18

***Students wishing to specialize in coal mining may do so by electing E.M. 217, Coal Preparation, and selecting a coal mining design problem in E.M. 220, Mine Design.

RECOMMENDED TECHNICAL ELECTIVES

E.M. 112—Mine Plant Design	3	E.M. 229—Adv. Mine Equip. Appl.	3
E.M. 215—Indus. Safety Engr.	2	E.M. 230—Elements of Geop. Prosp.	3 or 4
E.M. 217—Coal Preparation	3	E.M. 234—Applied Geophysics	3
E.M. 218—Adv. Mineral Prep.	3	I.E. 140—Motion & Time Study	3
E.M. 219—Adv. Mining Method for Vein Deposits	3	T.A.M. 103—Mech. of Materials	3
E.M. 224—Mining Eng'g. Prob.	1 to 3	Econ. 115—Labor Problems	3
E.M. 228—Mine Equip. & Machine Controls	3	Manag. 217—Personnel Management	3
		M.E. 230—Heat Transfer	3

CURRICULUM IN PETROLEUM ENGINEERING

Degree: Bachelor of Science in Petroleum Engineering

Petroleum engineering deals with the discovery, production and transportation of oil and natural gas. Consequently, the petroleum engineer must be soundly grounded in the principles of geology as related to the occurrence, discovery, and production of natural gas and petroleum. In this curriculum this training is obtained by the study of geology as well as by the geological principles developed in the courses relating to oil field development and production. In addition, the petroleum engineer must be well grounded in the principles of oil and gas production as well as in the technology of transportation. This training may be obtained in the several courses pertaining to petroleum technology and in natural gas engineering and distribution as well as the courses given in the engineering and basic sciences and mathematics. Today, there is a strong trend towards employing the petroleum engineer as supervisors, managers, and executives. Education for this aspect of his career is provided by the courses in property evaluation, oil and gas law, as well as in economics and the humanities. In the senior year electives are provided by use of which the student may obtain additional training in geology or geophysics or in management of supervisory skills or in some special phase of petroleum and natural gas technology. Assistance in this phase of the program will be given by an adviser assigned to the student for this purpose.

The School is particularly fortunate in that West Virginia is a petroleum and natural gas producing state and as a result local production and gas storage fields, secondary recovery projects, compressor stations and refineries provide excellent opportunity for field study of petroleum engineering problems, techniques, and methods. The petroleum laboratories of the School are well equipped for laboratory study of gas measurement apparatus, for core analysis as well as for the study of drilling muds and for study of and experiments on drilling and pumping machinery.

FIRST YEAR PETROLEUM ENGINEERING

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 15—Fund. of Chem.	4	Chem. 16—Fund. of Chem.	4
English 1—Comp. and Rhet.	3	English 2—Comp. and Rhet.	3
E.M. 1—Freshman Orientation	0	Math. 16—Calculus	4
Math. 15—Calculus	4	Geol. 1—Physical Geology	3
Hist. 1—World Civilization	3	Mil. Sci. 2 or A.S. 2	2
Mil. Sci. 1 or A.S. 1	2	Phys. Ed. 2—General Program	1
Phys. Ed. 1—General Program	1		
	17		17

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Physics 11—General Physics	4	Physics 102—General Physics	4
Math. 17—Calculus	4	Math. 140—Adv. Appl. Math.	3
Chem. 141—Physical Chemistry	4	T.A.M. 101—Statics	3
E.M. 106—Mineralogy	2	Econ. 52—Principles	3
Econ. 51—Principles	3	Hist. 2—World Civilization	3
Mil. Sci. 3 or A.S. 3	2	Mil. Sci. 4 or A.S. 4	2
	19		18

SUMMER

E.M. 102—Mine Surveying (5 weeks) 5

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
T.A.M. 104—Dynamics	3	E.E. 105—Electrical Fundamentals	4
Physics 124—Modern Physics	4	I.E. 244—Eng'g. Statistics	3
English 5—American Lit.	3	T.A.M. 102—Mech. of Materials	3
Pet.E. 106—Oil & Gas Field Div. and Production	4	Pet.E. 235—Fund. of Well Logging	3
C.E. 115—Fluid Mechanics	3	Geol. 272—Petrol. Geology	3
Geol. 151—Structural Geology	3	Pet.E. 236—Mech. of Hydrocarbon Fluids	3
	20		19

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Mat.E. 250—Element of Mat. Sci. Eng'g.	3	Pet.E. 237—Comp. & Prop. of Oil Well Drilling Fluids	2
M.E. 121—Thermodynamics	3	Pet.E. 216—Pet. Engr. Design	3
E.E. 205—Electrical Fund.	4	English 6—American Lit.	3
Pet.E. 232—Pet. Reservoir Eng'g.	5	G. 100—Inspection Trip	0
Pet.E. 206—Natural Gas Eng'g.	3	Technical Electives	5
		**Non-technical electives	6
	18		19

**Non-technical electives must be selected from the following fields: Art, Foreign Language, Humanities, Music, and Philosophy.

RECOMMENDED TECHNICAL ELECTIVES

E.M. 207—Introductory Seismology	1	Pet.E. 242—Well Stimulation: Fracturing	3
E.M. 214—Mine Val., Cost Control and Economics	3	T.A.M. 103—Mech. of Materials	3
E.M. 215—Ind. Safety Eng'g.	2	Geol. 2—Phys. Geol. Lab.	1
E.M. 230—Elem. of Geop. Prosp.	3 or 4	Geol. 161—Field Geology	3
Pet.E. 240—Sec. Recovery of Oil by Water Flooding	3	Geol. 170—Nat. Res. & Geol. of West Virginia	2 or 3
Pet.E. 241—Petrol. Mgt. Eng'g.	4	M.E. 230—Heat Transfer	3

FIVE-YEAR CURRICULA

Degree: Bachelor of Science in conjunction with a degree in engineering.

These curricula are designed to meet the needs of students who wish to receive a broader training than is provided in the four-year program. They also enable the student to take lighter schedules than are required in the four-year curricula.

(A) Requirements for the degree of Bachelor of Science, to be conferred at the end of the fourth year, where the student's grade-point average is 2.5 or over, or at the time of the conferring of the engineering degree where the grade-point average is below 2.5.

(1) The requirements of the first three years of any four-year engineering curriculum.

(2) a. Twelve semester hours of one foreign language, where no secondary school entrance credits have been allowed, or
b. Six semester hours at intermediate level, where two units of entrance credits have been allowed in the same foreign language.

(3) Electives from the following groups, amounting to six semester hours where (2a) applies and twelve semester hours where (2b) applies.
a. Not more than three hours each of English, history, and speech.
b. Not more than six hours each in any one or more than the following groups: foreign language (other than specified above); journalism; commerce, political science; and philosophy, psychology, and sociology.

(B) Requirements for the Bachelor of Science degree in engineering or mining or petroleum engineering, to be conferred on completion of the work of the fifth year.

SPECIAL ENGINEERING CURRICULA

1. *Elective Groups for Students in Other Colleges.* Candidates for degrees other than engineering degrees, and special students in any department of the University, are permitted to elect subjects in the College of Engineering and the School of Mines, provided, in each case, they have had the subjects specified as prerequisites. Students who wish to take a general classical or scientific course of study before taking the engineering curriculum are advised to carry their mathematics as far as called for by the engineering curriculum, and to take some elective work in the College of Engineering or the School of Mines.

2. *Partial Curriculum.* Students who have not the time or are otherwise unable to take the full curriculum will be allowed to take a special or partial curriculum, consisting of such studies as they are prepared to take, provided such curriculum shall have been approved by the adviser. For information as to requirements for admission of special students, see page 36.

PROFESSIONAL DEGREES

The University confers the following professional degrees: Aerospace Engineer (A.E.), Chemical Engineer (Ch.E.), Civil Engineer (C.E.), Electrical Engineer (E.E.), Mechanical Engineer (M.E.), Engineer of Mines (E.M.), and Petroleum Engineer (Pet.E.).

The professional degree is conferred upon graduates of the College of Engineering and of the School of Mines of West Virginia University on the basis of practical

experience and study in absentia, the presentation of a thesis, and oral final examination.

To be eligible, a candidate for a professional degree must have been in active practice of his profession for at least five years since receiving his first degree, and must have been in responsible charge of important work at least two years.

Application for registration as a candidate for a professional degree should be made not later than October 1 in the academic year in which the degree is desired. Detailed regulations and registration blanks may be obtained from the Dean of the College of Engineering or from the Dean of the School of Mines.

Courses in the College of Engineering*

AEROSPACE ENGINEERING

A.E.

116. **Introduction to Flight Vehicles.** 3 hr. PR: M.E. 20, Physics 102, and/or conc: Math. 140. Discussion of flight vehicles of the past, present, and future. Introduction to the methods of graphical communication, production, and fabrication used in the aerospace industry. Solution of aerospace problems by graphical, digital, and analog methods. 2 hr. lec., 3 hr. lab.

201. **Fluid Dynamics I.** 4 hr. PR: Math. 140; or conc: M.E. 120, A.E. 116. Properties of the fluid medium, dimensional analysis, hydrostatics, kinematics and dynamics of a fluid field, perfect fluid flow about a body, complex potential function, conformal transformation, thin airfoil theory, finite wing theory. 4 hr. lec.

203. **Applied Aerodynamics.** 3 hr. PR: A.E. 209. Chordwise and spanwise airload distribution for plain wings, wings with aerodynamic and geometric twist, wings with deflected flaps, and wings with ailerons deflected. Section induced drag characteristics. 3 hr. lec.

205. **Experimental Fluid Dynamics.** 2 hr. PR: A.E. 223. Subsonic and supersonic wind tunnel testing methods and practice. Experiments include the following measurements: pressure distribution on bodies, boundary layer determination, turbulence measurements, force tests, and stability and performance determinations. Corrections for scale and jet boundary effects. Data collection. Data reduction by digital computer. Test design, data analysis, and engineering report preparation. 1 hr. lec., 3 hr. lab.

207. **Flight Vehicle Design.** 3 hr. PR: A.E. 209. Preliminary design of flight vehicles. Vehicles are designed with regard for performance and stability requirements, considering aerodynamics, weight and balance, structural arrangement, configuration, guidance, and propulsive effects. Layout drawings and calculations are combined in a preliminary design report. 1 hr. lec., 6 hr. lab.

208. **Flight Testing.** 2 hr. PR: A.E. 209. Flight test theory and practice. Stability and performance determination based on flight test of Cessna Skywagon and Cessna 150. Flight test data reduction practice. 1 hr. lec., 3 hr. lab.

209. **Flight Mechanics.** 3 hr. PR: A.E. 201. Performance estimation with emphasis on fixed wing aircraft. Fundamental concepts of stability and control of aircraft. 3 hr. lec.

210. **Flight Vehicle Structures I.** 3 hr. PR: T.A.M. 103. Strength of thin walled structures in bending, shear, and torsion. Strain energy and application of Castigliano's theorem to bending of rings and curved bars, and to analysis of frames. Principle of Virtual Work and its application to beam and truss deflections and to statically indeterminate structures. 3 hr. lec.

*Courses marked with an asterisk may be taken as undergraduate work by students in other colleges and schools.

211. **Flight Vehicle Structures II.** 3 hr. Tension fields and the Design of Wagner Beam. Buckling of compression structures: Bars, Sandwich Columns, torsional instability of columns, wrinkling in Sandwich construction, plates, shells and stiffened panels. Design for minimum weight. Introduction to Thermal Stresses. Failure by Fatigue and Fracture. 3 hr. lec.

212. **Design of Flight Structures I.** 3 hr. PR: A.E. 207, 211. Structural design and analysis of flight vehicle members. Layout and detail design of specified components are required. 1 hr. lec., 6 hr. lab.

213. **Experimental Flight Vehicle Structures.** 1 hr. PR: A.E. 211. Strength tests of flight vehicle materials, static test of components, bending and torsion of shell structures, compression tests of thin-walled structures. 3 hr. lab.

217. **Design of Flight Structures II.** 3 hr. PR: T.A.M. 103. Analysis and detail design of simple fittings, beams, welded structures, forgings, castings. Methods of production and fabrication. 1 hr. lec., 6 hr. lab.

218. **Aeroelasticity.** 3 hr. PR: A.E. 210. The study of vibrating systems of single degree and multiple degrees of freedom, flutter theory and modes of vibration, torsional divergence and control reversal. 3 hr. lec.

219. **Introduction to Research.** 1-3 hr. PR: Senior standing and consent. An introduction to the methods of organizing theoretical and experimental research. Formulation of problems, project planning, and research proposal preparation.

220. **Research Problems.** 2-6 hr. PR: A.E. 219. Performance of the research project as proposed in A.E. 219. Project results are given in written technical reports, with conclusions and recommendations.

223. **Fluid Dynamics II.** 3 hr. PR: A.E. 201, M.E. 120. Introduction to compressible, nonviscous fluids, isentropic flow, Prandtl-Meyer expansion, shock waves, airfoils in compressible flow, small perturbation theory, viscous incompressible flow, boundary layer, exact and integral solutions, introduction to turbulence. 3 hr. lec.

224. **Flight Vehicle Propulsion.** 3 hr. PR: A.E. 223. Application of thermodynamics and gas dynamics to combustion. Turbine cycles with emphasis on turboprop and turbojet propulsion. Ramjets. Rocket propulsion by chemical, nuclear and electrical systems. Propulsion of staged vehicles. 3 hr. lec.

225. **Guided Missile Systems.** 3 hr. PR: A.E. 223, and/or conc: A.E. 224. Design philosophy according to mission requirements. Preliminary configuration and design concepts. Aerodynamic effects on missiles during launch and flight. Ballistic missile trajectories. Stability determination by analog simulation. Performance determination by digital and analog simulation. Control, guidance, and propulsion systems. Operational and reliability considerations. 3 hr. lec.

226. **Fluid Dynamics IV.** 3 hr. PR: A.E. 223. Shock tube theory and applications. Introduction to kinetic theory, the calculation of viscosity and thermal conductivity. Fundamentals of hypersonic flow and the determination of minimum drag bodies. 3 hr. lec.

227. **Advanced Topics in Propulsion.** 3 hr. PR: A.E. 224 or consent. Theoretical analysis of combustion and detonation and its application to jet and rocket engines. Application of nuclear energy to aircraft and rocket propulsion. Electrical propulsion systems. Solar sails and other exotic systems. 3 hr. lec.

*258. **Space Mechanics.** 3 hr. PR: Math. 140, T.A.M. 104. An introduction of flight in and beyond the earth's atmosphere by space vehicles. The laws of Kepler and Orbital theory. Energy requirements for satellite and interplanetary travel. Exit from and entry into an atmosphere. 3 hr. rec.

*Courses marked with an asterisk may be taken as undergraduate work by students in other colleges and schools.

280. **Aerospace Problems.** 1-3 hr. Upper division and graduate.

299. **Thesis.** 2-6 hr. PR: Senior standing and permission.

AGRICULTURAL ENGINEERING

Ag.E.

10. **Principles of Agricultural Engineering.** 3 hr. PR: Math. 4. Introduction to several fields of agricultural engineering and how they are applied in agriculture and industry. 3 hr. rec.

180, 181. **Assigned Topics.** 1-3 hr. per sem.

200. **Seminar.** 1 hr. PR: Senior standing.

201. **Agricultural Structures.** 3 hr. PR: T.A.M. 102. Structural design and functional requirements of agricultural buildings. 2 hr. rec., 3 hr. lab.

210. **Application of Electricity to Agriculture.** 3 hr. PR: E.E. 105. Economic application of electric light, heat, and power. 2 hr. rec., 3 hr. lab.

220. **Agricultural Process Engineering.** 3 hr. PR: C.E. 115, M.E. 121. Application of the fundamentals of engineering to agricultural engineering processes. 2 hr. rec., 1 hr. lab.

230. **Farm Power.** 3 hr. PR: M.E. 121. Fundamental theories underlying design and operation of internal combustion engines used in agriculture. 3 hr. rec., 3 hr. lab.

240. **Hydrology.** 3 hr. PR: C.E. 115. The study of a hydrologic cycle with emphasis on precipitation and runoff as related to design of hydraulic structures, soil and water conservation, and flood control. 3 hr. rec.

241. **Physical Climatology.** 3 hr. PR: Consent. Physical principles underlying the variations and changes in climate; climatic controls; elements of micro-climatology; engineering applications and uses of climatic data. 3 hr. rec.

250. **Soil and Water Conservation.** 3 hr. PR: C.E. 115. Engineering principles and practices in conservation, utilization, and management of soil and water resources. 2 hr. rec., 3 hr. lab.

290. **Elements of Machinery Design.** 3 hr. PR: M.E. 201. Design requirements for construction, principles of operation and adequate adjustment of agricultural machines and principles of testing agricultural equipment. 2 hr. rec., 3 hr. lab.

CHEMICAL ENGINEERING

Ch.E.

201. **Chemical Engineering Fundamentals.** 3 hr. PR: T.A.M. 101, T.A.M. 104, Math. 140. Review of vector and tensor algebra; viscosity; method of shell balances; equations of continuity, motion, and energy; Navier-Stokes equation; turbulent flow; flow through porous media; microscopic momentum balances; boundary layer; heat conduction in solids; convective heat transfer; boiling and condensation; radiation; diffusion of mass; film and penetration theory; analogies among heat, mass, and momentum transfer. 3 hr. rec.

202. **Chemical Engineering Fundamentals.** 3 hr. Continuation of Ch.E. 201. 3 hr. rec.

210. **Process Engineering.** 3 hr. PR: Ch.E. 202. Process equipment calculations for unsteady state. Determination of maximum and minimum process conditions. Economics of processing methods. 3 hr. rec.

224. **Process Development.** 3 hr. PR: Chem. 134, 144, Ch.E. 202 and 243. Development of process systems from the modified unit operations-unit process concept. Use of thermodynamics and kinetics in the evaluation of system requirements and performance. 3 hr. rec.

242. **Chemical Engineering Thermodynamics and Kinetics.** 3 hr. PR: Chem. 144. Material and energy balances; internal energy levels; statistical distributions and statistical evaluation of thermodynamic functions; empirical evaluation of thermodynamic functions; second law of thermodynamics; thermodynamic properties of solutions and solid phases; chemical and physical equilibria. Kinetics of simple and complex chemical reactions; development of rate equations. Kinetics of vapor-catalytic reactions; development of rate equations and mechanisms of reactions; backmixing. 3 hr. rec.

243. **Chemical Engineering Thermodynamics and Kinetics.** 3 hr. Continuation of Ch.E. 242. 3 hr. rec.

270, 271. **Chemical Engineering Professional Block.** 9 hr. each. PR: Completion of all technical courses prescribed for the first three years. Professional aspects of Chemical Engineering involving analysis, synthesis and design, process dynamics, design of experiments, materials, engineering, design and computation laboratories, and seminar on engineering practice and ethics. Includes a comprehensive plant design project. Thirty-five hours per week divided between lecture, recitation, computation and experimental laboratory. The Engineer-in-Training examination is required.

280. **Chemical Engineering Problems.** 1-6 hr. For juniors, seniors, and graduate students. May be used to correct deficiencies preparatory or following courses such as Ch.E. 270 and 271 or for students in other disciplines desiring to take only a portion of a course.

284. **Industrial Instrumentation and Control.** 3 hr. PR: Math. 140. Discussion of process characteristics, theory and application of measuring means. Theory, modes and application of automatic control. Selection and characteristics of final control elements. 3 hr. rec.

297. **Thesis.** 2-5 hr. A problem in chemical engineering or industrial chemistry is selected for investigation. A carefully prepared report is required. Open only to qualified seniors. 6-15 hr. lab.

Materials Science Engineering

Mat.E.

*250. **Engineering Materials Science.** 3 hr. PR: Physics 124 or 125. Includes a study of the internal structures of metals, ceramics, and organic materials and the dependence of properties upon these structures. Also the behavior of materials under conditions involving mechanical stresses, thermal reactions, corrosion, electromagnetic fields and radiation. 3 hr. rec.

263, 264. **Principles of Materials Engineering.** 3 hr. each. PR or conc: Mat.E. 250. Theory and fundamental principles involved in the development and production of engineering materials from their basic sources. Recommended for nonmajors. 3 hr. rec.

Nuclear Engineering

Nuc.E.

*290. **Introductory Nuclear Engineering.** 3 hr. PR: Physics 124 or 125. Includes elementary nuclear physics necessary for understanding nuclear engineering. Design and operation of nuclear reactors, shielding, instrumentation, health physics, fuel cycles, uses of radioactive isotopes, nuclear propulsion. 3 hr. rec.

*Courses marked with an asterisk may be taken as undergraduate work by students in other colleges and schools.

CIVIL ENGINEERING

C.E.

°1. **Surveying.** 2 hr. PR: Math. 4. For other than civil engineering students. Elementary theory of measurement of distance, direction, and difference in elevation. Field work with transit, tape, level, stadia, and plane table. Office computation and plotting. 1 hr. rec., 3 hr. lab.

°5. **Land Surveying.** 4 hr. PR: Math. 4. Primarily for forestry students. Theory and practice with compass, transit, level, stadia, and plane table; computations of area; astronomical observations; map plotting. 2 hr. rec., 6 hr. lab.

°6. **Topographic Mapping.** 2 hr. PR: C.E. 5. Primarily for forestry students. Topographic maps; surveys for roads and property lines; U.S. Public Land Surveys; practice in lettering, plotting, and inking of topographic maps. 1 hr. rec., 3 hr. lab.

100. **Introduction to Civil Engineering.** 1 hr. PR: Freshman standing. A survey of the historical foundations of civil engineering and the role of the profession in the future. The basic areas of civil engineering will be introduced and discussed to familiarize the student with the opportunities inherent in civil engineering careers. Introduction to the digital computer and its application to civil engineering problems. 3 hr. rec. and lab.

102. **Survey Engineering.** 6 hr. PR: Math. 15. Theory of measurement and errors; introduction to least squares; figure of the earth; study of instruments for measuring distance, direction, and elevation including their geometry, accuracy, use, and adjustment; terrestrial and celestial spheres and field astronomy; horizontal and vertical curves; earthwork measurement; triangulation; boundary surveying. The design, execution and testing of field surveys for maps, boundaries and routes; determination of true meridian, calculation of areas.

°115. **Fluid Mechanics.** 3 hr. PR or conc: T.A.M. 104. Fluid statics, laminar and turbulent flow of compressible and incompressible fluids, flow measurements, open channel flow, and kinetics of fluids. 3 hr. rec.

131. **Highway Engineering.** 4 hr. PR: C.E. 102. Highway administration, economics, and finance; planning and design; subgrade soils and drainage; construction and maintenance. Design of a highway. Center line and grade projections, earthwork and cost estimate. 3 hr. rec., 3 hr. lab.

141. **Railway Engineering.** 3 hr. PR: C.E. 102. Development and importance of the railroad industry. Principles of location, construction, operation, and maintenance. 3 hr. rec.

146. **Sanitary Engineering I.** 3 hr. PR: C.E. 115. Hydrology as applied to water and waste systems. Design of water distribution and waste water systems. The study and partial design of water and waste water treatment facilities. 2 hr. rec., 3 hr. lab.

147. **Sanitary Engineering II.** 3 hr. PR: C.E. 115. Examination of water and waste water, water treatment, waste water treatment and special problems in public health, air pollution and radioactivity. 2 hr. rec., 3 hr. lab.

160. **Structural Analysis I.** 5 hr. PR: T.A.M. 101 and 102. Analysis of stresses and deflections in statically determinate structures caused by fixed and moving loads. Study of influence lines and loading criteria for beams, and plane and space framed structures. Application of electronic computer techniques to structural problems. 4 hr. rec., 3 hr. lab.

°Courses marked with an asterisk may be taken as undergraduate work by students in other colleges and schools.

210. **Photogrammetry.** 3 hr. PR: C.E. 102. Geometry and interpretation of the aerial photograph; flight planning; radial-line control; principles of stereoscopy; plotting instruments. 2 hr. rec., 3 hr. lab.

211. **Geodesy.** 3 hr. PR: C.E. 102 and Math. 16. Precise base line measurements, triangulation and leveling, geodetic astronomy; figure of the earth, map projections; rectangular coordinate systems; least squares adjustments; gravity. 3 hr. rec.

221. **Engineering Hydraulics.** 3 hr. PR: C.E. 115. Fundamental principles of flow, similitude, flow measurement, water hammer and surging, channel transitions, gradually varied flow, wave motion and sediment transportation. Design of various elements of hydraulic structures. 2 hr. rec., 3 hr. lab.

222. **Open Channel Flow.** 3 hr. PR: C.E. 115. An analysis of the hydraulic problems associated with natural waterways, man made waterways, and the design of the hydraulic structures of open channels. 3 hr. rec.

231. **Concrete and Aggregates.** 3 hr. PR: C.E. 131, T.A.M. 103. Considerations and methods for the design of concrete mixes. Effect of air entraining agents and other additives. Studies of the influence of aggregate properties on the design and performance of concrete mixtures. An analysis of the methods of test commonly used for concrete and aggregates and the significance of these tests. 3 hr. rec.

232. **Principles of Transportation Engineering.** 3 hr. PR: C.E. 131 or consent. A basic approach to the problem of integrated transportation systems from the standpoint of assembly, haul, and distribution means. Analysis of the characteristics of the transport equipment and traveled way. Power requirements, speed, stopping, capacity costs, economics of location and route selection will be discussed. Future technological developments and innovations will be considered. 3 hr. rec.

233. **Construction Methods.** 3 hr. PR: C.E. 131 or equiv. The study of construction methods, equipment, and administration with particular emphasis on the influence of new developments in technology. 2 hr. rec., 3 hr. lab.

251. **Public Health Engineering.** 3 hr. PR: C.E. 146 or 147 or consent. The engineering aspects involved in the control of the environment for the protection of the health and the promotion of the comfort of man. Discussions will include communicable disease control, milk and food sanitation, air pollution, refuse disposal, industrial hygiene, and radiological health hazards. 3 hr. rec.

252. **Water Resources Engineering.** 3 hr. PR: C.E. 115. Design of water-resource systems. The interrelationship between economic objectives, engineering analysis and governmental agencies. 3 hr. rec.

260. **Structural Analysis II.** 3 hr. PR: C.E. 160. An introduction to the fundamental theory of statically indeterminate structures. General theory of continuity and iterative and energy methods applied to the analysis of indeterminate beams and frames. 3 hr. rec.

261. **Statically Indeterminate Structures.** 3 hr. PR: C.E. 260. Advanced topics in indeterminate structural analysis for trusses and nonprismatic members. 3 hr. rec.

270. **Structural Design I.** 3 hr. PR or conc: C.E. 260. Theory and design of reinforced concrete members. Design considerations for concrete bridges and buildings. 2 hr. rec., 3 hr. lab.

271. **Structural Design II.** 3 hr. PR or conc: C.E. 260. Design of steel bridge and building structures. Welded, riveted, and bolted connections; simple and moment-resistant connections; cost estimates. 2 hr. rec., 3 hr. lab.

272. **Plastic Design of Steel Structures.** 3 hr. PR: C.E. 260 or consent. The fundamental concepts of the plasticity of steel. Analysis of structures for ultimate load. The influence of axial forces, shear forces, and local buckling on the plastic moment. Study of structural connections and deflections. Steel structure design. 3 hr. rec.

273. **Prestressed Concrete.** 3 hr. PR: C.E. 270. The analysis and design of determinate and indeterminate prestressed beams and frames. 3 hr. rec.

274. **Timber Design.** 3 hr. PR: C.E. 160 and For. 232. Emphasis on the fundamentals of modern timber design and analysis. Topics to be presented include a review of wood properties, the design of beams, columns, arches, trusses and pole structures using dimensional lumber, glue-laminated and plywood components. Detailed study of connections using nails, shear connectors and adhesives. 3 hr. rec.

275. **Reinforced Concrete.** 3 hr. PR: C.E. 160. Theory and design of slabs, beams, columns, footings, retaining walls, and concrete buildings, with emphasis on ultimate load design. 2 hr. rec., 3 hr. lab.

280. **Soil Mechanics.** 3 hr. PR: C.E. 115, T.A.M. 101. Origins and distribution of soils, classification of soils, fundamental soil properties, and stresses in soils. Subsurface exploration. Introduction to foundations design and the design and construction of earth structures. 2 hr. rec., 3 hr. lab.

281. **Foundations Engineering.** 3 hr. PR: C.E. 131, 280. Soils exploration and the design and analysis of engineering foundations. Particular emphasis on earth pressures and the design of retaining walls, studies of bracing systems and the elements of shallow and deep foundations for bridges and buildings. Movement of water through soil structures and control of water in excavations. 3 hr. rec.

290. **Civil Engineering Problems.** 1-4 hr. For junior, senior, and graduate students.

ELECTRICAL ENGINEERING

E.E.

*25. **Electric Circuits I.** 4 hr. PR: Math. 17, Physics 102. Basic concepts, nonlinear elements, introduction to steady state electrical circuit theory (d-c and a-c), Ohm's law, Kirchhoff's laws, circuit analysis theorems, phasor algebra and its application to a-c circuit analysis. 3 hr. rec., 3 hr. lab.

*105. **Electrical Fundamentals.** 4 hr. PR: Math. 140, Physics 102. Fundamental principles of electric and magnetic circuits. Induced and generated electromotive force. Fundamental a-c circuit analysis. Polyphase systems. Elementary electronics. (Primarily for non-electrical engineering students.) 3 hr. rec., 3 hr. lab.

*125. **Electrical Circuits II.** 4 hr. PR: E.E. 25, Math. 140. Complex frequency concept, Laplace transformation, transient analysis of both d-c and a-c circuit analysis. 3 hr. rec., 3 hr. lab.

*126. **Electric and Magnetic Fields I.** 3 hr. PR: E.E. 25, Math. 140, Physics 102. Electric scalar potential; line integrals; the vector concepts of gradient, divergence and curl; flux lines and potential theory; the electric dipole, polarization; electric and magnetic fields of symmetrical geometrical systems; magnetic vector potential; ferromagnetism; elements of field mapping; summary in Maxwell's equations. 3 hr. rec.

*152. **Electronics I.** 4 hr. PR: E.E. 125, 126, Physics 126 or conc. The study and use of semi-conductor devices and vacuum tubes as circuit elements; rectifiers and voltage amplifiers. 3 hr. rec., 3 hr. lab.

*Courses marked with an asterisk may be taken as undergraduate work by students in other colleges and schools.

180. **Electrical Problems.** 1-3 hr. For sophomore and junior students.

200. **Seminar.** (Credit). PR: Senior standing. Special material and projects.

*205. **Electrical Fundamentals.** 4 hr. PR: E.E. 105. Fundamentals and operating characteristics of electrical machines and transformers. Electron tube, phototube, and transistor characteristics. Electronic circuits. (Not open to electrical engineering students.) 3 hr. rec., 3 hr. lab.

210. **Electronics for Scientists.** 3 hr. PR: General Physics and Calculus or Consent. A special course for chemists, physicists, medical researchers and other research workers having a limited background in electronics. The material covered will begin with electrical and electronic fundamentals and leads systematically into servomechanisms, operational amplifiers, digital circuits, and other devices used in current laboratory research and control problems. (Not open to Engineering students.) 1 hr. rec., 6 hr. lab.

*225. **Electric Circuits III.** 4 hr. PR: E.E. 125. Distributed circuits (transmission lines), steady analysis of distributed circuits, simulation of distributed circuits by equivalent lumped parameter circuits. Interpretation of transmission line as general four terminal network (A B C D constants), matrix methods of combination of four terminal networks, introduction of "modern" network analysis. 3 hr. rec., 3 hr. lab.

226. **Electromagnetic Fields II.** 3 hr. PR: E.E. 126. Plane waves in dielectric media; plane waves in conducting media; transmission lines; wave guides; antennas. 3 hr. rec.

232. **Electromechanical Devices I.** 4 hr. PR: E.E. 125, 126. Fundamentals of electromechanical energy conversion. Transformers and rotating machines. 3 hr. rec., 3 hr. lab.

233. **Electromechanical Devices II.** 4 hr. PR: E.E. 232. Analysis of machine-performance by the principles of electromechanical energy conversion. 3 hr. rec., 3 hr. lab.

235. **Electrical Machinery.** 3 hr. PR: E.E. 232 or consent. Synchronous machines, windings, calculation of emf and mmf; mmf space functions. Potier diagram, ASA regulation, 2-reactance diagrams. Multiple-winding transformers and auto transformers. 2 hr. rec., 3 hr. lab.

236. **Electrical Machinery.** 3 hr. PR: E.E. 233 or consent. Commutation theory of machines, d-c and a-c multiple-winding and special purpose machines; multiple machine systems. 2 hr. rec., 3 hr. lab.

251. **Electronics II.** 3 hr. PR: E.E. 152, 225, 226. Analysis of feedback amplifiers, power amplifiers, oscillators and modulation systems. 2 hr. rec., 3 hr. lab.

252. **Electronics III.** 3 hr. PR: E.E. 251. Analysis of demodulation systems, wave-shaping circuits, electronic power-handling systems, photo-sensitive devices and microwave devices. 2 hr. rec., 3 hr. lab.

253. **Physical Electronics.** 3 hr. PR: E.E. 152. A study of the physical principles of electrical conduction and the application of these principles to electronic conduction in solids, electron emission, and conduction in vacuum and gas. 3 hr. rec.

257. **Transistor Circuits.** 3 hr. PR: E.E. 251 or consent. Application of the basic principles of semiconductor electronics to the junction transistor. Development of the terminal properties of the junction transistor. 3 hr. rec.

261. **Networks and Filters.** 3 hr. PR: E.E. 225 or consent. Analysis and synthesis of network and filters. 3 hr. rec.

*Courses marked with an asterisk may be taken as undergraduate work by students in other colleges and schools.

*264. **Communications Engineering.** 3 hr. PR: E.E. 251 or consent. Communications systems, or systems used to transmit information. The underlying principles of modern information transmission systems are stressed. Emphasis is placed upon the fundamental role of system bandwidth and noise in limiting the transmission of information. 3 hr. rec.

270. **Engineering Analysis and Design.** 3 hr. PR: E.E. 232, 251. Formulation and application of the method of engineering analysis based upon fundamental physical laws, mathematics, and practical engineering considerations. Emphasis is placed on the professional approach to the analysis of engineering problems. 3 hr. rec.

*271. **Theory of Digital Computers.** 3 hr. PR: Senior standing in Engineering or Mathematics. Introduction to the field of digital computer design. Topics include general computer organization, number systems and number representations, design characteristics of major computer units, Boolean algebra and its application to computer design and sequencing of basic arithmetic processes in a computer. 3 hr. rec.

275. **Pulse Techniques.** 3 hr. PR: E.E. 225, 251. An introduction to the response of electrical networks to non-sinusoidal inputs, the analysis of active networks with large signals and the circuits and techniques used in pulse and digital equipment. 3 hr. rec.

280. **Eletcrical Problems.** 1-3 hr. For junior, senior, and graduate students.

281. **Electrical Power Systems.** 3 hr. PR: E.E. 226 or consent. Polyphase transformation with three-phase and with single-phase transformers. Principles of circuit protection and relaying. Principles of grounding. Introduction to symmetrical components. 3 hr. rec.

282. **Symmetrical Components.** 3 hr. PR: E.E. 226 or consent. An application to the methods of symmetrical phase components in calculating currents in systems under various types of unbalanced conditions. 3 hr. rec.

285. **Electric-Power Transmission and Distribution.** 3 hr. PR: E.E. 226. Circle diagrams applied to the various problems of power transmission; phase modifier applications and an introduction to power stability. 3 hr. rec.

286. **Fundamentals of Servomechanisms.** 3 hr. PR: E.E. 225. Fundamental analysis of the servomechanisms and automatic control devices. 3 hr. rec.

288. **Antennas.** 3 hr. PR: E.E. 226 or consent. Analysis and design of antenna systems. 3 hr. rec.

*293. **Analogue Computers.** 3 hr. PR: Math. 140. The theory and operation of analogue computers. Amplitude scaling and time scaling on the analogue computer and application of the analogue computer to the solution of differential equations. 3 hr. rec.

299. **Ultra-High Frequency Technology.** 3 hr. PR: E.E. 226 or consent. Special problems encountered at high and ultra-high frequencies. 3 hr. rec.

GENERAL

G.

1. **Engineering Lectures.** (Credit). Required of all freshmen in engineering. A series of lectures designed to acquaint the engineering student at the beginning of his course with the profession he has chosen. 1 hr. lec.

*Courses marked with an asterisk may be taken as undergraduate work by students in other colleges and schools.

INDUSTRIAL ENGINEERING

I.E.

°7. **Welding and Heat Treatment.** 1 hr. Practice in cutting and welding steel and cast iron with oxyacetylene and arc welding equipment. Demonstrations of different methods of heat treatment. One 3 hr. lab.

°11. **Machine Work.** 2 hr. Equipment, purpose and character of operations, methods of holding work, turning, boring, drilling, grinding, and shaping. Use of precision measuring instruments. Two 3 hr. labs.

°15. **Welding, Forming, and Heat Treatment.** 2 hr. Molding and casting of nonferrous metals, oxyacetylene welding, electric welding, resistance welding of plates, pipes, tubing, etc. Lectures, recitations, demonstrations, and laboratory practice. 6 hr. lab.

°100. **Manufacturing Processes.** 3 hr. Lectures, demonstrations, and laboratory work relating to methods, types of equipment and character of operations of welding machines and machine tools. Emphasis is placed on the economic use of machine tools, assembly line manufacture, gauging, and inspection. 2 hr. rec., 3 hr. lab.

110. **Tool Design.** 3 hr. PR: I.E. 100. Design, construction, application, and economic aspects of jigs, fixtures, and special tools used in manufacturing on a production basis. 2 hr. rec., 3 hr. lab.

131. **Fundamentals of Industrial Engineering.** 3 hr. PR: Sophomore standing. Principles of organization, including study and design of organization charts. Integration of motion and time study, production control, accounting job evaluation, engineering economy, and other functions of industrial engineering into a composite industrial picture. Review of existing labor laws and current legislation 3 hr. rec.

°140. **Motion and Time Study.** 3 hr. PR: Junior standing. Principles and techniques, job analysis, standardization, and formula construction; stop watch and micromotion analysis of industrial operations; development of production and incentive standards. 2 hr. rec., 3 hr. lab.

142. **Production Control.** 3 hr. PR: I.E. 140. Planning, scheduling, routing and dispatching in manufacturing operations and production control systems. Problems in industrial plant design. Layout for operation and control. Space utilization. 3 hr. rec.

°151. **Accounting for Engineers.** 3 hr. PR: Junior standing. The accounting cycle, journals, and ledgers; study of fixed assets and depreciation; interpretation of financial statements. A survey of the essentials of cost accounting. Emphasis is placed on the utilization of cost data and reports by management, indicating management's control over industrial operations. 3 hr. rec.

180. **Introduction to Digital Computation.** 3 hr. PR: Math. 2 or 3. Introduction to stored-program concepts, flow diagrams, looping, decisions, input-output techniques, algebraic compilers, symbolic assembly systems. machine languages, subroutines, equipment components, and their applications. The student will have considerable opportunity to actually program numerical problems for the University's computers. The field of present and future equipment components will be surveyed, and the advantages and disadvantages of various techniques and systems will be indicated. 2 hr. rec., 3 hr. lab.

°200. **Metal-Cutting Theory and Practice.** 3 hr. PR: I.E. 100. Mat.E. 250. Metal-cutting tools, tool materials, work materials, cutting fluids, process of chip formation, cutting forces, tool-life tests, economics of tool life, measurement of product. 2 hr. rec., 3 hr. lab.

°Courses marked with an asterisk may be taken as undergraduate work by students in other colleges and schools.

201. **Metal Forming Manufacturing Processes.** 3 hr. PR: I.E. 100 or consent. Applications and operations of the basic metal forming processes including the primary metal working processes and the metal shearing, drawing, binding, and squeezing processes, along with the machine tools required for these processes. 3 hr. rec.

205. **Metal Forming Theory.** 3 hr. PR: I.E. 201. The mechanics and basics of metal forming with elementary theoretical and descriptive investigations of tube-sinking, deep-drawing, wire-drawing, extrusion, cold rolling, and forging. 3 hr. rec.

207. **Metal Casting Manufacturing Processes.** 3 hr. PR: I.E. 100 and Mat.E. 250 or consent. Fluidity processes used in industry covering non-permanent processes such as sand molding, centrifugal molding, investment molding, and shell molding. Some permanent mold methods will be investigated along with metal processes, molding machines, and fundamentals of costing design. 3 hr. rec.

211. **Industrial Engineering Problems.** 1-3 hr. PR: Consent of Department Chairman. Special problems relating to industrial engineering.

°214. **Advanced Analysis of Engineering Data.** 3 hr. PR: I.E. 244. The application of advanced theories of statistical techniques to analyze and interpret industrial problems. Subjects include multiple regression, curvilinear regression, advanced analysis of variance, randomized complete blocks, Latin Square designs, factorial designs, transformations, and analysis of response curves. Accent is on proper design of experiments, proper interpretation of results, and thorough consideration of all errors of estimation and errors of inference. 3 hr. rec.

°215. **Statistical Decision Making.** 3 hr. PR: I.E. 244 or consent. Basic concepts of probability theory, discrete and continuous distributions, joint and derived distributions, expectation, and properties of estimators. Special emphasis is placed on the applications of probability theory in Operations Research, Quality Control, and Human Factors Engineering. 3 hr. rec.

°244. **Engineering Statistics.** 3 hr. PR or conc: Math. 17. The use of graphical analysis; measures of central tendency and dispersion; normal, binomial, and Poisson distributions in engineering applications; linear regression and correlation; tests of significance, nonparametric statistics, and analysis of variance. 3 hr. rec.

°250. **Electronic Computer Data Processing.** 3 hr. PR: Senior standing. Fundamentals of digital computer operations, equipment characteristics, input and output components. Elements of number systems. Fundamentals of "IR," information retrieval. Emphasis is placed on integrated systems analysis and design, business and industrial data for computer applications, and fundamentals of programming. Existing equipment systems and the economics of their applications will be reviewed.

253. **Analytical Techniques of Operations Research.** 3 hr. PR: I.E. 244. A study of the analytical techniques used in operations research and industrial engineering with special emphasis on their application to industrial systems and operations. The applications of matrix algebra, vectors and convex set theory to linear programming. Minimization techniques including differencing, differentiation of single and multiple integrals and Langrangian multipliers with application to production and inventory problems. Markov Processes with applications to production problems and decision making. 3 hr. rec.

°Courses marked with an asterisk may be taken as undergraduate work by students in other colleges and schools.

*254. **Introduction to Operations Research.** 3 hr. PR: I.E. 244, and conc: I.E. 142 or consent. Economic problems of production management, schematic models, linear programming, total value analysis, incremental analysis, Monte Carlo analysis, and equipment investment analysis. 3 hr. rec.

256. **Introduction to Systems Engineering.** 1 hr. PR: I.E. 214, conc: I.E. 254, I.E. 287. The nature of scientific methodology including: quantitative synthesis of models with accompanying objectives and restrictions, definition of terms, sampling and measurement of components of the model, development and testing of assumptions, optimization techniques, testing and controlling the model and the solution, and error sensitivity of the model. Emphasis will also be toward development of the problem-solver's ability to successfully assign resources to the problem solution phases in a manner such as to equalize the marginal cost of improving the model's reliability. This course will provide an opportunity for the student to analyze an operation as it may interact with the whole system. 1 hr. rec.

281. **Digital Computation for Engineers.** 3 hr. PR: Math. 15. Study of the programming process with emphasis on coding with an automatic programming language, FORTRAN. Introduction to numerical methods with engineering and scientific applications. The student will have ample opportunity to program University computers. 2 hr. rec., 3 hr. lab.

282. **Advanced Digital Computer Concepts.** 3 hr. PR: I.E. 180 or 281 or consent. Principles of digital computer functional components. Study of digital operating systems including structure of the various subsystem components such as monitors, input output control systems, and loaders. Advanced operating system concepts including multiprogramming, multiprocessing, teleprocessing, and time sharing will be covered. Various existing operating systems will be evaluated as well as principles in overall system design. 3 hr. rec.

283. **Informational Retrieval.** 3 hr. PR: I.E. 180 or 281 or consent. A study of the tools, elements and theories of information storage and retrieval. Areas of study include documentation, information framework; indexing; elements of usage, organization and equipment; parameters and implementation; theories of file organization and system design. 3 hr. rec.

284. **Simulation by Digital Methods.** 3 hr. PR: I.E. 244 or consent and Fortran programming experience. An introduction to methods of simulation using the digital computer. Study of the methods of generating random numbers, the Monte Carlo technique, process generators, industrial dynamics models, methods of error analysis and reduction, and digital computer simulation languages such as Simscript, Dynamo, Fordyn, and especially GPSS (General Purpose System Simulator-III). The student will be provided the opportunity to use the digital computer to simulate moderately complex production, inventory, queuing, and maintenance systems. Although the primary emphasis is more practically restricted to models of industrial operations, the techniques are immediately adaptable to simulation of any physical or information system. Simulated experiments are also considered. 3 hr. rec.

*287. **Engineering Economy.** 3 hr. PR: Junior standing. Comparison of the relative economy of engineering alternatives; compound interest in relation to calculation of annual costs; present worth and prospective rates of return on investments; methods of depreciation; sunk costs, increment costs; general economy studies with emphasis on retirement and replacement of equipment; consideration of taxes, public works, and manufacturing costs as related to economic solution of engineering proposals. 3 hr. rec.

*288. **Job Evaluation and Wage Incentives.** 3 hr. PR: I.E. 140 or consent. Principles used in evaluating jobs, rates of pay, characteristics and objectives of wage incentive plans; incentive formulae and curves. 3 hr. rec.

*290. **Industrial Statistics.** 2 hr. PR: I.E. 244. Economic objectives of quality control in manufacturing through sampling methods; the Shewhart control chart for variables, attributes, and defects per unit; statistical approach to acceptance procedures. 2 hr. rec.

292. **Plant Layout and Design.** 3 hr. PR: I.E. 110 and 142. Problems in industrial plant design. Equipment location, space utilization, layout for operation and control, flow sheets, materials handling. Allied topics in power utilization, light, heat, and ventilation. 1 hr. rec., 6 hr. lab.

*294. **Standard Manufacturing Costs.** 3 hr. PR: I.E. 151. Development of standards for labor, material, and overhead expenses; uses of standards for control; analyses of variances between standard and actual costs. 3 hr. rec.

299. **Human Factors Engineering.** 3 hr. PR: Psychol. 115 or consent. An examination of human factors engineering and man-machine systems to include a study of ambient environment, human capabilities and equipment design. Application of human factors engineering in workplace design, maintainability, and task design methodology. Study of system design for man-computer interface, life support requirements, simulators and man-machine systems. 2 hr. rec., 3 hr. lab.

MECHANICAL ENGINEERING

M.E.

20. **Engineering Drawing and Graphics I.** 3 hr. PR: Plane geometry. Lettering, use of instruments, geometric construction, orthographic projection, section and conventions, auxiliary views, descriptive geometry, pictorial sketching, dimensioning. 2 hr. rec., 4 hr. lab.

109. **Mechanism.** 2 hr. PR: M.E. 26 and Math. 17. Analytical and graphical analysis of the displacement, velocity and acceleration properties of fundamental machine configurations. Study of the requirements for constrained motion as a basis for mechanical synthesis and motion programming. 6 hr. lab.

112. **Kinematics and Dynamics of Machines.** 3 hr. PR: M.E. 109 and T.A.M. 104. Analytical and graphical analysis of force and motion effects applying to mechanical systems. Problems of periodic motion on force and isolation.

120. **Engineering Thermodynamics.** 3 hr. PR: Physics 111 and Math. 17. First and second laws of thermodynamics; energy equations; proptreies of gases and vapors; gaseous mixtures and combustion. 3 hr. rec.

121. **Thermodynamics of Engineering.** 3 hr. PR: Physics 111, Math. 17. Principles of thermodynamics; properties of gases and vapors; vapor cycles; internal combustion engines cycles; refrigeration; and heat transfer. Not open to students majoring in mechanical engineering. 3 hr. rec.

125. **Engineering Thermodynamics.** 3 hr. PR: M.E. 120 or consent. Continuation of M.E. 120; gas cycles; vapor cycles; air-vapor mixtures; flow; thermodynamics relations and equilibrium. 3 hr. rec.

126. **Advanced Engineering Graphics.** 2 hr. PR: Math. 17. Nomography, graphical and numerical analysis, vectors, problem solution by analog and digital computers, graphical integration differentiation.

132. **Measurements and Computers.** 2 hr. PR or conc: M.E. 120. Measurements, data analysis, standards and accuracy, calibration, pressure, force and temperature, etc., as applied in the experimental technique. An introduction to analog and digital computations. 1 hr. rec., 3 hr. lab.

*Courses marked with an asterisk may be taken as undergraduate work by students in other colleges and schools.

133. **Engineering Laboratory.** 2 hr. PR: M.E. 132. Continuation of M.E. 132. Experiments involving heat transmission, refrigeration, and internal combustion engines. 3 hr. lab.

201. **Design of Machine Members.** 3 hr. PR: T.A.M. 103 and M.E. 112 or consent. Analysis and design of machine members based on the theory of strength of materials and its modifications due to manufacturing processes and economic considerations. Emphasis is on rational methods and the development of judgment in the design. 1 hr. rec., 6 hr. lab.

202. **Engineering Analysis and Design.** 3 hr. PR: M.E. 201 and consent. Use of fundamental principles of mathematics, statics, physics, mechanics, thermodynamics, and heat transfer in the rigorous analysis of engineering problems. Determination of the critical specifications of the problem solution and the use of a creative approach to the satisfaction of these critical specifications in a workable system. 2 hr. rec., 3 hr. lab.

203. **Machine Design.** 3 hr. PR: M.E. 201. Design of complete machines to perform given functions. Creative design is encouraged to provide new ideas. Final designs are selected to perform the function, be economical and easy to fabricate, and have a generally pleasing appearance. 1 hr. rec., 6 hr. lab.

204. **Mechanical Vibrations.** 3 hr. PR: Math. 253 and M.E. 112 or consent. Fundamentals of vibration theory. Free and forced vibration of single and multiple degree of freedom systems. Solution by Fourier and Laplace transformation techniques. Transient analysis emphasized. Energy methods. 3 hr. rec.

205. **Kinematics.** 3 hr. PR: M.E. 112 and Math. 253, or consent. Geometry of constrained motion, kinematics synthesis and design, special linkages. Coupler curves, inflection circle, Euler-Savary equation, cubic of stationary curvature and finite displacement techniques. 3 hr. rec.

223. **Power Plants.** 3 hr. PR: M.E. 125. Principles of design and operation of modern steam power plants for central stations and for process industries. Each student submits an individual design problem. 3 hr. rec.

225. **Problems in Thermodynamics.** 3 hr. PR: M.E. 125 or consent. Detailed study of thermodynamic systems with special emphasis on actual processes. The problems presented are designed to strengthen the background of the student in the application of the fundamental thermodynamic concepts. 2 hr. rec., 3 hr. lab.

228. **Mechanical Engineering Laboratory.** 1 hr. PR: M.E. 132. Application of measurements to the testing of machines, heat transmission, refrigeration, internal combustion engines, etc. 3 hr. lab.

229. **Internal Combustion Engines.** 3 hr. PR: M.E. 121 or M.E. 125. The thermodynamics of the internal combustion engines; Otto cycle; Diesel cycle; two- and four-cycle engines, fuels, carburetion and fuel injection; combustion; engine performance, supercharging. 3 hr. rec.

230. **Heat Transfer I.** 3 hr. PR: M.E. 120 or M.E. 121. Steady state and transient conduction, including extended surface and numerical methods, emphasizing both forward and backward time step methods. Thermal radiation including radiation functions and radiation network theory. Boundary layer equations and forced and free convection are also covered. 3 hr. rec.

231. **Introduction to Gas Dynamics.** 3 hr. PR: M.E. 125 or M.E. 121, Math. 240 and Math. 253. Basic fundamentals of gas dynamics, one-dimensional gas dynamics and wave motion, methods of measurement, effect of viscosity and conductivity, and concepts from gas kinetics. 3 hr. rec.

235. **Heat Transfer II.** 3 hr. PR: M.E. 230. A continuation of M.E. 230, covering nonlinear extended surface; gas radiation; freezing, heat exchanger theory; recovery factor and high speed flow; and mass transfer. Also, periodic flow and application of the digital computer to problems in heat transfer. 3 hr. rec.

250. **Heating, Ventilating, and Air Conditioning.** 3 hr. PR: M.E. 125 or consent. Methods and systems of heating, ventilating, and air conditioning of various types of buildings, types of controls and their application. 3 hr. rec.

260. **Introductory Engineering Systems Analysis.** 3 hr. PR: Senior standing. A study of analogues and mixed systems. Similitude of mechanical, electrical, and acoustic dynamic systems. Dimensional analysis and theory of model design. 3 hr. rec.

265. **Engineering Acoustics.** 3 hr. PR: Math. 140 and consent. Use of fundamental principles of mathematics and physics to develop the basic theories of sound. Application of these theories involving sound in closed areas, the various modes of sound transmission, noise control, and psychoacoustic criteria. 3 hr. rec.

271. **Introduction to Feedback Control Theory.** 3 hr. PR: Math. 140 and E.E. 105 or equivalent background. Introduction to automatic control systems and concepts of feedback. Transfer function analysis of the equations of motion. Transient and steady state response. Stability criteria using Nyquist, root locus and frequency response techniques. 3 hr. rec.

280. **Mechanical Problems.** 1-6 hr. For junior, senior, and graduate students.

THEORETICAL AND APPLIED MECHANICS

T.A.M.

101. **Statics.** 3 hr. PR: Math. 17, Physics 11 (or reg. in Math. 17). Fundamental definitions and the concept of static equilibrium; systems of forces and couples; application to solution of trusses and frames; centroids and moments of inertia. 3 hr. rec.

102. **Mechanics of Materials I.** 3 hr. PR: T.A.M. 101 and Math. 17. Stress, strain, stress-strain relationships; Mohr stress and strain-circles; load-stress and load-deformation relationships for axial, torsion, bending, and buckling loads; inelastic theory is considered; deflections; column theory. 3 hr. rec.

103. **Mechanics of Materials II.** 3 hr. PR: T.A.M. 102 and Math. 17. Theories of failure and design procedures; survey of experimental stress analysis; fatigue, energy, creep, relaxation, and temperature considerations. Laboratory work in behavior of common engineering materials under load; evaluation and interpretation of mechanical properties. 2 hr. rec., 3 hr. lab.

104. **Dynamics.** 3 hr. PR: T.A.M. 101 and Math. 17. Kinematics of a particle; moment of inertia of masses; translation, rotation and plane motion of rigid bodies; principles of work and energy, impulse and momentum; application to engineering problems. 3 hr. rec.

200. **Advanced Mechanics of Materials I.** 3 hr. PR: T.A.M. 103 or consent. Energy methods; localized stresses; nonsymmetrical bending; curved flexural members; thick-walled cylinders and rotating disks; beams on elastic supports.

201. **Theory and Application of Oscillatory Phenomena.** 3 hr. PR: T.A.M. 104. Study of oscillations or vibrations in acoustical, electrical, hydraulic and mechanical systems. 3 hr. rec.

202. **Advanced Laboratory.** 3 hr. PR: Consent. Applied engineering measurements and instrumentation dealing with mechanical phenomena as force, displacement, pressure, torque, velocity, and acceleration. Introduces students to various transducer, signal conditioning, and readout equipment. Time allowed for term project of specific student interest.

203. **Experimental Stress Analysis.** 3 hr. PR: T.A.M. 103, 104. Introduction to some of the more common experimental methods of analyzing stress distributions. Photoelasticity, brittle lacquers, birefrigent coatings, strain gage techniques and instrumentation, as applied to problems involving static, dynamic and residual stress distributions. 2 hr. rec., 3 hr. lab.

250. **Intermediate Dynamics.** 3 hr. PR: T.A.M. 104, Math. 140. Brief review of vectorial mechanics of systems of particles and applications. Derivation of Lagrange's Equations from the principle of virtual work and D'Alembert's Principle. Application of these equations to conservative and nonconservative systems. Orbital motion. 3 hr. rec.

280. **Special Problems in Mechanics.** 1-3 hr. PR: T.A.M. 103 and consent. For junior, senior, and graduate students.

Courses in the School of Mines

ENGINEERING OF MINES

E.M.

1. **Freshman Orientation.** I. (Credit). Required of all freshmen in mining and petroleum engineering. A series of lectures designed to acquaint the student at the beginning of his course with the characteristics and requirements of the engineering profession, with particular attention to the mineral engineering fields. 1 hr. lec.

102. **Mine Surveying.** SI. 5 hr. PR: Math. 15. Principles of surface and subsurface surveying, celestial observations, and related calculations together with intensive field practice in underground and surface surveying. Rec. and field work arranged.

106. **Mineralogy.** I. 2 hr. PR: Chem. 16. Mineral identification, blowpipe analysis of minerals; occurrence, geographic distribution and utilization of minerals; elements of crystallography. Two 3 hr. labs.

108. **Fundamentals of Mining.** I. 4 hr. PR: Geol. 1, Math. 117, Physics 102, E.M. 102, or consent. Mineral prospecting, drilling, use of explosives, mining methods for bedded deposits and ore bodies, timbering and application of mining machinery. 4 hr. rec.

112. **Mine Plant Design.** II. 3 hr. PR: E.M. 212, T.A.M. 102, C.E. 115 and Mat.E. 250 or concurrent enrollment. Applications of the principle of mechanics and mining technology to the analysis and design of mine building, head-frames, bins, skips and cages. 2 hr. rec., 3 hr. lab.

200. **Elements of Mineral Conservation.** I. 3 hr. PR: Open to any student in the University with Junior standing. A study of the future demands for mineral resources including coal, water, oil, gas, ores, and industrial minerals and the causes of mineral loss in production and utilization and how to avoid or minimize them.

201. **Fire Control Engineering.** 3 or 4 hr. PR: Senior standing in an engineering curriculum or consent. The aspects involved in the control from fire, explosion and other related hazards. Protective considerations in building design and construction. Fire and explosive protection organization including fire detection and control. Lectures 3 and/or lab. 1 hr.

207. **Introductory Seismology.** I. 1 hr. PR: Physics 11. Earthquakes and the causes and area distribution; theory of elastic waves; the principles of seismograph construction, adjustment, and operation; interpretation and calculation of seismographs with exercises provided by records of the University seismograph station. 1 hr. rec.

209. **Mineral Preparation.** II. 3 hr. PR: T.A.M. 104, or consent. Principles of preparation, beneficiation and concentration of metallic and non-metallic ores for further processing or utilization. 2 hr. rec., 3 hr. lab.

212. **Advanced Mining.** II. 3 hr. PR: E.M. 108 and PR or conc: E.E. 105. Engineering principles, methods and equipment applied to mine transportation, hoisting, and drainage. 3 hr. rec.

213. **Mine Ventilation.** I. 3 hr. PR: E.M. 108, T.A.M. 104 and C.E. 115. Principles, purposes, methods and equipment pertaining to the ventilation of mines. 2 hr. rec., 3 hr. lab.

215. **Industrial Safety Engineering.** I. 2 hr. PR: Junior standing or consent. Analysis of problems of industrial safety and accident prevention, laws pertaining to industrial safety and health, compensation plans and laws, and industrial property protection. 2 hr. rec.

217. **Coal Preparation.** I. 3 hr. PR: E.M. 212, C.E. 115, and E.M. 209. Formation of coal, rank, classification of coal, coal petrography, principles of preparing and beneficiating coal for market with laboratory devoted to sampling, screen analysis, float and sink separation and use of various types of coal cleaning equipment. 2 hr. rec., 3 hr. lab.

218. **Advanced Mineral Preparation.** II. 3 hr. PR: E.M. 108 and E.M. 209. The theory and practice of concentration ores and industrial minerals with special consideration to the more recent advances in the beneficiation of both ores and coal. 2 hr. rec., 3 hr. lab.

219. **Advanced Mining Methods for Vein Deposits.** II. 3 hr. PR: E.M. 108, T.A.M. 104. Methods and systems of mining other than flat seams. Emphasis placed on selection of methods in relation to cohesive strength of ore bodies and their enclosing wall rocks. Mining of anthracite seam included. 3 hr. rec.

220. **Mine Design.** I, II. 3 hr. PR: E.M. 212 and E.M. 241. A comprehensive design problem involving underground mining developments or design of surface plant or both, as elected by the student in consultation with the instructor. A complete report on the problem is required including drawings, specifications and cost analysis. 9 hr. lab.

222. **Mine Equipment and Machinery.** II. 3 hr. PR: E.E. 205 and E.M. 212. Selection, installation, operation, and maintenance of mining equipment. 3 hr. rec.

223. **Mine Management.** II. 3 hr. PR: Math. 140, E.M. 212 and senior standing. Economic, governmental, social, and labor aspects of mining as related to the management of a mining enterprise. 3 hr. rec.

224. **Mining Engineering Problems.** I, II. 1-6 hr. PR: Senior or graduate standing. Investigation and detailed report on a special problem in mining engineering related to coal mining or mineral mining. Supervision and guidance by a member of the graduate faculty.

228. **Mine Equipment and Machinery Controls.** I. 3 hr. PR: E.M. 222 or consent. Principles, application and use of electric and hydraulic devices and circuits for protection and control of mine machinery and equipment. 3 hr. rec.

229. **Advanced Mining Equipment Applications.** II. 3 hr. PR: E.M. 228. Structural, mechanical, hydraulic and electrical characteristics of the more common items of mining equipment. Controls, electrical and hydraulic circuits, and mechanical transmissions with associated problems. Laboratory design of a control system for a mining machine. 2 hr. rec., 3 hr. lab.

230. **Elements of Geophysical Prospecting.** I. 3 or 4 hr. PR: Geol. 1, Physics 11. Principles, calculations and application of methods for locating subsurface oil, gas, and mineral deposits. Field investigations using instruments with 4 hr. section.

234. **Applied Geophysics.** II. 3 hr. PR: Physics 102 and Geol. 151 or consent. Origin of the universe and the planets, heat and age of the earth. Application of the science of geophysics in the location and analysis of earthquakes and in prospecting for oil and minerals.

241. **Mechanics of Ground Control in Mines.** I. 3 hr. PR: T.A.M. 102, Math. 140, E.M. 108 or consent. Structure of the earth's crust, bedding planes, joints, heterogeneity, mechanical properties of rocks, stress-time-deformation relationships in rocks, theoretical stress distribution about mine openings, practical effects, factors in mine pillar design, pillar bursts, creeps and squeezes, mining subsidence. 2 hr. rec., 3 hr. lab.

PETROLEUM ENGINEERING

Pet.E.

106. **Principles Applying to Oil and Gas Field Development and Production.** I. 4 hr. PR: Math. 17 and Geol. 1. Introduction to principles and science of oil property development and oil and gas production science. 3 hr. rec., 3 hr. lab.

206. **Natural Gas Engineering.** I. 3 hr. PR: Pet.E. 106, C.E. 115. Principles of natural gas production, transmission, distribution, processing, regulation, measurement, storage and analysis with a laboratory devoted to the principles of the equipment utilized in the above named operations. 2 hr. rec., 3 hr. lab.

216. **Petroleum Engineering Design.** II. 3 hr. PR: Pet.E. 232, Material Engr. 250. A comprehensive problem in design involving systems in oil and gas production, field processing, transportation and storage. Three 3-hr. labs.

224. **Petroleum Engineering Problems.** I, II. 1-6 hr. PR: Senior or graduate standing. Investigation and detailed report on a special problem in petroleum or natural gas engineering.

232. **Petroleum Reservoir Engineering.** I. 5 or 6 hr. PR: Pet.E. 236. Concepts on application of properties of rocks and rocks-fluids systems which are fundamental to engineering analysis of petroleum reservoirs, mechanics of fluid flow in porous media, production by depletion drive, by frontal displacement, by water drive, by segregation drive and secondary recovery. 5 hr. rec., 1 hr. lab. with 6 hr. credit.

235. **Fundamentals of Well Logging.** II. 3 hr. PR: Math. 140, Pet.E. 106, or consent. Principles of the various well logging methods and related calculations with exercises in interpretation of data from actual well logs. 2 hr. rec., 3 hr. lab.

236. **Mechanics of Hydrocarbon Fluids.** I. 3 hr. PR: Physics 102, C.E. 115, Pet.E. 106, Chem. 141. The qualitative and quantitative phase behavior of single and multicomponent hydrocarbon systems with emphasis on application to petroleum production engineering and pearoleum reservoir engineering. 2 hr. rec., 3 hr. lab.

237. **Composition and Properties of Oil Well Drilling Fluids.** II. 2 hr. PR: Pet.E. 106, Chem. 141, and C.E. 115. Principles of drilling fluid control including a laboratory for pilot testing, mud design procedures and measurement of composition and properties. 1 hr. rec., 3 hr. lab.

240. **Secondary Recovery of Oil by Water Flooding.** I. 3 hr. PR: Pet.E. 232 or consent. Theory of immiscible fluid displacement mechanism, evaluation, and economics of water flood projects and oil field flooding techniques. 3 hr. rec.

241. **Petroleum Management Engineering.** II. 4 hr. PR: Pet.E. 106, Pet.E. 235, Econ. 2. Petroleum property evaluation, factors influencing oil economics, values of money and taxation of oil properties. Calculation of reserves and future reservoir performance, decline curves, production and formation testing and social aspects of management of oil and gas properties. 4 hr. rec.

242. **Well Stimulation: Fracturing.** I. 3 hr. PR: Pet.E. 106, Pet.E. 241. Theory of hydraulic fracturing, fracturing tools, fracturing fluids, fracturing orientation; propping agents and general design treatment for optimum profitability. 3 hr. rec.

Research and Extension

THE ENGINEERING EXPERIMENT STATION

C. A. Arents, *Director*
J. A. Kent, *Associate Director*
J. F. Parmer, *Assistant Director*

The chief functions of the Engineering Experiment Station are to encourage and carry on research and investigations that will enhance the industrial and economic welfare of the people of West Virginia; to make original contributions to the fundamental principles and knowledge along scientific and engineering lines; and to stimulate and train graduate students in research activities.

The research undertaken by the Station therefore is primarily concerned with investigations in the production, processing, and utilization of the natural resources of West Virginia; investigations that will aid existing industries and promote the development of new industries in the State; and investigations that will aid in the planning, design, and development of the public works of the State. As a consequence of this program, the subjects receiving particular attention by the staff of the Station are fuels, clays, stone, sand, timber, water supplies, air and stream pollution, electric power, sewerage, sanitation, road building, transportation, aeronautics, and communications.

The Station will assist in compiling surveys and in conducting investigations of the industrial requirements and possibilities of any region or community in the State. It cooperates with the West Virginia University Agricultural Experiment Station, State Road Commission, State Geological and Economic Survey, State Water Commission, U.S. Bureau of Mines, U.S. Forest Service, national engineering societies, and state or national agencies whose assistance may promote the more effective fulfillment of the Station's functions.

To aid State industrial organizations that lack facilities and personnel to undertake important research investigations which arise in the development of their operations, the Station stands ready to assist with investigations on their fundamental problems. Several companies and technological associations are sponsoring research fellowships in the Station.

The staff of the Station includes part-time services of teaching members of the faculties of the College of Engineering and the School of Mines, as well as full-time research engineers, and chemists, graduate student research assistants and fellows.

The results of the studies, surveys, investigations, and researches of the Experiment Station are published in bulletin form. Two series of bulletins are issued, and to date there are 28 numbers in the Research Series and 63 in the Technical Series. The Technical Bulletins contain certain selected papers from the *Proceedings* of the Annual State Water Purification Conferences, the State Coal Conferences, the Appalachian Gas Measurement Short Courses, the Appalachian Underground Corrosion Short Courses, and the Industrial Engineering Conferences. In addition, several technical papers have been published; these are articles in the engineering, scientific, and technical journals. A list of publications and copies of the bulletins may be obtained upon application to the Director of the Engineering Experiment Station.

Through the College of Engineering and the School of Mines the Station has access to a wide range of talent and specialized knowledge and is able to supplement these with the resources of other colleges.

U. S. BUREAU OF MINES STATION

The United States Bureau of Mines maintains laboratory and pilot-plant facilities for research and development work on the production of synthesis gas from coal, which is part of the Bureau's over-all program for synthetic fuel development.

Under the terms of a cooperative agreement between the University and the Bureau, students are employed by the Bureau on a part-time basis.

In the selection of part-time student workers, preference is given to those in the upper one-third of their class.

INDUSTRIAL ENGINEERING CONFERENCE

The Industrial Engineering Conference for Management and Supervision, sponsored by the Department of Industrial Engineering of the College of Engineering, and co-sponsored by the Charleston-Huntington, Mid Ohio Valley, and Upper Ohio Valley Chapters of the American Institute of Industrial Engineers, is held annually in the spring in Morgantown. The Conference is designed to promote the dissemination of information on industrial engineering principles and techniques, looking toward increased efficiency and reduced costs in industrial processes. Specialists in various fields present papers and lead discussions in problems related to scientific subjects.

FORCED WARM AIR SHORT COURSE

The Forced Warm Air Short Course, held annually during the winter months for three days, is sponsored by the Department of Industrial Engineering of the College of Engineering, and the gas utilities of West Virginia.

The short course offers an opportunity for heating contractors, appliance sales personnel, and others in the forced warm air field to tap the resources of industry and the University. The objective of this course is to promote better design and installation of forced warm air heating systems.

MINING AND INDUSTRIAL EXTENSION*

The Department of Mining and Industrial Extension of the School of Mines conducts courses of instruction in practical subjects in various sections of the State where groups of individuals wish to study and receive training in subjects pertaining to their everyday work. The Department also aims to disseminate useful knowledge which has been amassed by research studies at the University to all citizens in the State, and in this way to bring the University and its opportunities for learning to various groups of students who desire to enroll in its extension department. Information and special announcements pertaining to Extension courses may be obtained by writing to the Department of Mining and Industrial Extension, West Virginia University, Morgantown.

SHORT COURSE IN COAL MINING*

The fifty-fifth annual Short Course in Coal Mining will begin Monday, May 8, 1967, and continue until Friday, June 23, 1967.

The Short Course in Coal Mining offered by the Department of Mining and Industrial Extension gives an opportunity to operators, officials, and employees of mining companies to obtain instruction pertaining to their work. The subjects covered in the short course are: explosives, methods of mining, timbering, mine gases, mine ventilation, hoisting, mine drainage, safety lamps, mine management, electricity in mines, mine fires and explosions, organization and administration, mining arithmetic, and elementary drawing. Tuition is free.

Special attention is given to students desirous of preparing themselves for the teaching of mining classes under the Smith-Hughes and George-Dean Acts.

SHORT COURSE IN COAL PREPARATION*

The seventeenth annual Short Course in Coal Preparation conducted by the University will begin Tuesday, June 13, 1967, and continue for six weeks. This course is held principally for men who have been associated with the sizing and preparing of coal for the market.

The classroom portion of the course covers the purpose of coal preparation, breaking and crushing, screening, cleaning, analysis of float and sink tests and washability curves, dewatering and drying, dedusting and dust collection, recovery of

*Administered through the West Virginia Center for Appalachian Studies and Development

fines, auxiliary equipment, treatment of coal surfaces, loading, cost, power, water, labor, and analysis of flow sheets.

In the laboratory, the equipment includes a sand media cone, Baum jig, calcium chloride washer, heavy media cone washer, concentrating tables, basket jigs, air cleaning table with filter-type dust collectors, magnetic separator, centrifuges, and a complete closed-circuit mineral floatation unit. These units are all self-contained pilot units with auxiliary equipment to permit complete test operation.

VOCATIONAL COURSES OFFERED IN EXTENSION*

Courses in foreman training and other special courses for those in industry are offered in centers where there is sufficient interest. The instruction in these courses is carried on by the University extension instructors who visit each center every week.

At the present, the work is planned to cover mine gases, safety lamps, ventilation, timbering, explosives, haulage, prevention of mine accidents, mine waste, drainage and pumping, mining methods, foremanship, electricity, mine fires and explosions, and coal geology. In each of these unit courses, particular emphasis is placed on safety features, state mining laws, and application of arithmetic to solving mining problems.

In addition to the above, special classes are offered in such subjects as effective speaking, group discussion, mine equipment and maintenance, mine surveying, coal preparation and other selected subjects for which there is local demand.

APPALACHIAN GAS MEASUREMENT SHORT COURSE*

The Appalachian Gas Measurement Short Course, held annually on the campus, is conducted by the University in cooperation with the Public Service Commission of West Virginia, the West Virginia Oil and Natural Gas Association, manufacturers of gas measurement and regulation equipment, and public utilities and industries producing, marketing, or consuming natural gas in West Virginia and neighboring states. The course provides instruction in the theory and practice of gas measurement and regulation, and is designed to be of interest to executives and officials of gas companies, as well as to metermen.

FIRE SERVICE EXTENSION SCHOOL*

The thirty-seventh annual West Virginia State Fire School, conducted by the University in cooperation with the State Fire Marshal and the West Virginia Rating Bureau, meets on campus during July.

It affords information on new developments and intensive training in various aspects of fire fighting to members of the fire service in the State. In addition, three short courses are provided on selected subjects pertinent to fire training at various times during the year. Announcements will be made as to the dates these schools will be held and the subjects to be considered. The permanent fire protection research and training center maintained on the campus, in cooperation with the office of the State Fire Marshal, will be utilized in the training provided by the annual State Fire School as well as by these short courses.

In addition, the University, in cooperation with the Vocational Division of the State Department of Education, offers the Firemen's Extension Course to fire departments in West Virginia. The course may be had upon application by the chief of any organized municipal or industrial department.

Instructional material covers such subjects as local water supply and distribution, apparatus and equipment, principles of combustion, portable extinguishers, hydraulics, pump operation, respiratory apparatus, hose and ladder practices, flammable liquids and gases, and fire fighting tactics.

Classes lasting three hours meet once a week for a period of 11 weeks. The courses are available at various centers in the State throughout the school year. The services of a full-time fire service instructor are available or the classes may be taught by a local instructor if desired. Approximately one-third of the total class time is devoted to actual fire department evolutions. Additional information on short courses and extension classes may be had by addressing an inquiry to the Director of Fire Service Extension, School of Mines, West Virginia University.

APPALACHIAN UNDERGROUND CORROSION SHORT COURSE*

The annual Corrosion Short Course for the Appalachian area meets on campus for a period of three days.

The Short Course affords an opportunity for personnel concerned with underground corrosion to add to their knowledge of the subject and to learn of new developments in this field. This course is sponsored by the School of Mines.

PETROLEUM AND NATURAL GAS EXTENSION COURSES*

In cooperation with the petroleum and natural gas industry, the Industrial Extension Department offers a five-year course of study in this subject at various locations throughout the State.

Course I is of a preparatory nature, and includes a review of mathematics and the principles of physics and mechanics. Course II cover such topics as the properties of natural gas, fluid flow, gas measurement, and gas transmission. Course III includes meter testing, pressure regulation, and compression. Course IV treats the principles of gas and oil, and production practices.

Classes are organized in September and meet weekly for a period of approximately eight months. Instructors are employed on a part-time basis by the University and are selected for technical training, ability, and industrial experience in the subjects which they will teach.

COAL RESEARCH BUREAU

Joseph W. Leonard, *Director*

The Coal Research Bureau of the School of Mines, was established by the University and written into law by the Legislature in 1962 following recommendations made by the Governor's Scientific Advisory Council on the Uses of Coal.

The Bureau's purpose is to find new uses and markets for West Virginia coal by actively carrying on a coal research program looking toward that end.

The Bureau is empowered to accept gifts, grants and contracts for coal research and to contract for research services with outside agencies. The research in the Bureau is carried on by the director and staff of the Bureau subject to the rules and regulations of the Board of Governors and under the supervision and direction of the Dean of the School of Mines. The work done by the Bureau covers a broad scope of technical interests ranging from economic studies to highly technical studies involving coal carbonization and conversion of coal to liquid and gaseous fuels. The Bureau keeps abreast of the work done by other research organizations and works in close cooperation with the Federal Bureau of Mines, the State Department of Mines, the Planning and Research Division of the State Department of Commerce, the Office of Coal Research, as well as with other divisions and departments of the University.

An Advisory Committee on Coal Research, appointed by the Governor, advises and counsels the University on the program of the Bureau and makes recommendations to the Governor and Legislature concerning the support of its program.

From time to time the Bureau will publish reports of its activities, findings, and recommendations and distribute them to interested parties and agencies.

*Administered through the West Virginia Center for Appalachian Studies and Development.

The College of Human Resources and Education

Stanley O. Ikenberry, Ph.D., *Dean of the College of Human Resources and Education and Associate Professor of Education* (1965), 1962.
Marvin R. Lee, M.A., *Administrative Assistant and Instructor in Education* (1965), 1956.

DIVISION OF CLINICAL STUDIES

Oscar G. Mink, Ed.D., *Director and Associate Professor of Clinical Studies* (1966).
Constantinos, Alexakos, Ph.D., *Assistant Professor of Counseling and Guidance* (1966).
Thomas L. Blaskovics, Ph.D., *Assistant Professor of Rehabilitation Counseling* (1965).
James S. Delo, Ph.D., *Assistant Professor of Counseling and Guidance* (1966).
Betty A. Gum, M.S., *Instructor in Guidance* (1966).
Thomas C. Hatcher, Ed.D., *Instructor in Reading* (1967).
Arreta L. Jaranko, Ed.D., *Instructor in Reading* (1963), 1962.
Eddie C. Kennedy, Ed.D., *Professor of Reading* (1962), 1953.
Glen P. McCormick, Ph.D., *Assistant Professor of Speech Pathology and Audiology* (1966).
Robert L. Masson, Ed.D., *Associate Professor of Rehabilitation Counseling* (1967), 1966.
Joseph Moriarty, Ph.D., *Assistant Professor of Rehabilitation Counseling* (1967).
James Mosko, Ph.D., *Associate Professor of Speech Pathology and Audiology* (1967).
James M. Mullendore, Ph.D., *Professor of Speech Pathology and Audiology* (1963).
Gabriel Nardi, Ph.D., *Assistant Professor of Special Education* (1966).
Robert H. Neff, Ed.D., *Associate Professor of Special Education* (1961), 1955.
John M. Panza, M.S., *Instructor in Rehabilitation Counseling* (1966).
Marsha H. Pushkin, M.S., *Instructor in Speech Pathology and Audiology* (1966).
Charles E. Smith, Ph.D., *Assistant Professor of Counseling and Guidance* (1966).
Edward Stormer, Ph.D., *Assistant Professor of Counseling and Guidance* (1966).
Charles K. Stuart, M.S., *Instructor in Rehabilitation Counseling* (1966).
Judith M. Thackston, M.A., *Instructor in Reading* (1965).
H. Waldo Wasson, Ph.D., *Professor of Speech Pathology and Audiology* (1962).

DIVISION OF EDUCATION

William K. Katz, Ed.D., *Director, Division of Education, and Associate Professor of Education* (1966), 1959.
Howard B. Allen, Ph.D., *Professor Emeritus of Education* (1963), 1920.
Benjamin H. Bailey, Ed.D., *Associate Professor of Education* (1959).
Sheldon Baker, Ph.D., *Assistant Professor of Education* (1967).
Robert D. Baldwin, Ph.D., *Professor Emeritus of Education* (1962), 1931.
Charles L. Barthe, M.A., *Instructor in Education* (1966).
Laddie R. Bell, Ed.D., *Associate Professor of Education and Coordinator of Graduate Cooperative Programs* (1963), 1962.
Earl R. Boggs, Pe.D., Ph.D., *Professor of Education* (1960).
Winifred M. Booth, M.A., *Assistant to the Dean and Lecturer in Education* (1961), 1930.
Thomas J. Brennan, Ed.D., *Professor of Education and Coordinator of Industrial Education* (1962), 1941.
Sara Ann Brown, Ph.D., *Professor of Education* (1955), 1946.
Russell C. Butler, Ph.D., *Professor of Education* (1956), 1944.
Harrie Caldwell, Ph.D., *Assistant Professor of Education* (1967).
Wincie Ann Carruth, Ph.D., *Professor of Education* (1960), 1957.
George H. Colebank, M.A., *Associate Professor Emeritus of Education* (1959), 1929.
Kermit A. Cook, Ph.D., *Professor of Education* (1959), 1935.
Glennis H. Cunningham, M.A., *Instructor in Education* (1956).
Harley V. Cutlip, M.A., *Instructor in Education* (1965).
Evelyn DiTosto, M.A., *Instructor in Education* (1963), 1962.
Mildred E. Fizer, M.A., *Instructor in Education* (1965).
Richard C. Franklin, Ph.D., *Professor of Education* (1965).
Wilson I. Gautier, Ed.D., *Assistant Professor of Education* (1964), 1960.
Keith E. Glancy, Ph.D., *Associate Professor of Education* (1965).

Mary Jane W. Glasscock, M.M., *Instructor in Education* (1958), 1943.
Virginia R. Griffin, M.S., *Assistant Professor of Education* (1966), 1965.
Harry B. Heflin, Ph.D., *Professor of Education* (1964).
Arthur N. Hofstetter, Ed.D., *Professor of Education and Coordinator of Research and Field Services* (1962), 1955.
Frederick J. Holter, Ph.D., *Professor of Education* (1964), 1938.
Leo Horacek, Ph.D., *Associate Professor of Education* (1964), 1960.
Earl Hudelson, Ph.D., *Professor Emeritus of Education* (1959), 1920.
Stanley O. Ikenberry, Ph.D., *Dean of the College of Human Resources and Education and Associate Professor of Education* (1965), 1962.
William Johnston, Ed.D., *Assistant Professor of Education* (1966).
Warren G. Kelly, M.S., *Assistant Professor of Education* (1957).
Marvin R. Lee, M.A., *Instructor in Education and Administrative Assistant* (1965), 1956.
Rogers McAvoy, Ph.D., *Assistant Professor of Education* (1966), 1961.
O. Claude McGhee, M.S., *Assistant Professor of Agricultural Education* (1961), 1949.
Delmas F. Miller, Ph.D., *Professor of Education and Chairman of Secondary Education* (1960), 1950.
Joanna V. Nesselroad, M.S., *Instructor in Education* (1966).
Ruth D. Noer, M.S., *Professor Emeritus of Education* (1963), 1925.
Dickson W. Parsons, Ph.D., *Professor Emeritus of Education* (1951), 1923.
John J. Paterson, Ed.D., *Associate Professor of Education and Coordinator of Research, Human Resources Research Institute* (1965), 1962.
John Semon, M.S., *Associate Professor of Education* (1960), 1959.
Forest W. Stemple, Ph.D., *Professor Emeritus of Education* (1952), 1931.
Michael Tseng, Ed.D., *Assistant Professor of Education* (1966).
Julie S. Vargas, Ph.D., *Assistant Professor of Education* (1966).
Roman J. Verhaalen, Ph.D., *Dean of Extension Service, Associate Director of Cooperative Extension and Professor of Education* (1964), 1949.
Paul W. Watson, M.A., *Instructor in Education and Research Associate* (1964).
Harry G. Wheat, Ph.D., *Professor Emeritus of Education* (1956), 1935.
Richard Wollin, Ph.D., *Associate Professor of Education* (1966).
Charles P. Yost, Ph.D., *Professor of Education* (1963), 1946.

DIVISION OF SOCIAL WORK

Bernhard Scher, D.S.W., *Director and Professor of Social Work* (1965), 1960.
Betty L. Baer, M.S., *Assistant Professor of Social Work* (1966).
John Barnes, M.S.W., *Assistant Professor of Social Work* (1965).
Mary Barnes, M.S.W., *Assistant Professor of Child Welfare* (1966).
Anna E. Blackwell, A.M., *Assistant Professor of Social Work* (1965), 1963.
Gerson David, D.S.W., *Associate Professor of Social Work* (1967).
Charlotte N. Diehl, M.S.W., *Assistant Professor of Rehabilitation Social Work* (1967), 1965.
Helen S. Ellison, M.S.W., *Assistant Professor of Social Work* (1961), 1954.
John Isaacson, M.S.W., *Assistant Professor of Social Work* (1966).
Mary Love, M.S., *Lecturer in Growth and Behavior* (1966).
Caroline T. Mudd, D.S.W., *Associate Professor of Social Work* (1967), 1957.
Dorothy F. Napoli, M.S.W., *Instructor in Social Work* (1967).
Josephine Harris Stewart, M.S.W., *Assistant Professor of Psychiatric Social Work* (1967), 1964.
Shankar Yelaja, D.S.W., *Assistant Professor of Social Welfare* (1966).

DIVISION OF FAMILY RESOURCES

William H. Marshall, Ed.D., *Director, Division of Family Relations and Professor of Child Development* (1966).
Gladys R. Ayersman, M.S., *Assistant Professor of Home Economics* (1959), 1956.
Sara Ann Brown, Ph.D., *Professor of Home Economics Education* (1955), 1946.
M. Hilda Dailey, M.S., *State Extension Home Management Specialist and Instructor in Home Economics* (1966), 1963.
Jacqueline R. Dotson, M.S., *Instructor* (part-time) *in Home Economics* (1965).
Babette Graf, M.S., *Assistant Professor of Home Economics* (1961).
Frank H. Hooper, Ph.D., *Assistant Professor of Child Development* (1967).

Mary R. Jones, M.S., *Associate Professor of Home Economics* (1964), 1941.
Ruth K. Jones, M.S., *State Clothing Specialist and Assistant Professor of Home Economics* (1966), 1941.
Helen W. Lindsay, M.S., *Instructor in Home Economics* (1964).
Tanner J. Livisay, M.S., *State Child Division and Human Relations Specialist and Assistant Professor of Home Economics* (1966), 1942.
Janice I. Mayfield, M.S., *Instructor in Home Economics* (1967).
Betty L. Ramsey, M.S., *Assistant Professor of Home Economics* (1963), 1956.
Jean S. Scher, M.S., *Assistant Professor of Early Childhood Education* (1967).
Sylvia C. Shapiro, M.Ed., *State Extension Program Leader—Home Demonstration and Instructor in Home Economics* (1966).
Carl B. Taylor, Ph.D., *Associate Professor of Family Life* (1966), 1961.
Ruth E. Weibel, M.S., *Assistant Professor of Home Economics* (1967), 1962.
Arthur R. Williams, Ed.D., *Assistant Professor of Family Relations* (1967).

UNIVERSITY HIGH SCHOOL

Delmas F. Miller, Ph.D., *Director* (1960), 1950.
E. Grant Nine, M.A., *Principal* (1960), 1956.
Wayne G. Baker, M.A., *Instructor, Industrial Arts* (1963).
Anna Brochick, M.A., *Instructor, English* (1939), 1938.
Sara E. Brock, M.S., *Instructor, Physical Education* (1962), 1961.
Allan R. Bryant, M.S., *Instructor, Vocational Agriculture* (1956).
Janet D. Callahan, M.S., *Instructor and Librarian* (1960).
Michael A. Caruso, M.A., *Instructor, Biological and Physical Science* (1960), 1956.
George H. Colebank, M.A., *Assistant Professor* (retired) (1950), 1928.
Ruth E. Cook, M.S.H.E., *Instructor, Vocational Home Economics* (1951).
Gloria J. Cunningham, M.S., *Instructor, Commerce* (1963), 1958.
Catherine M. Dorsey, M.A., *Instructor, Mathematics* (1948), 1943.
Dorothy C. Engle, M.A., *Instructor, English* (1956), 1955.
Homer M. Fizer, M.S., *Instructor, Physical Education* (1947), 1940.
Daniel F. Harris, M.A., *Teacher, Art* (1966).
William P. Hawley, B.S., *Teacher, Biological Science* (1964), 1963.
Sara E. Logan, M.A., *Instructor, Mathematics* (1964).
David H. R. Loughrie, LL.B., *Instructor, Social Studies and Integrated Studies* (1963).
JoAnn V. Massullo, B.S., *Instructor, French* (1964).
Lillie D. Morgan, A.M., *Instructor, English* (1963), 1962.
Kaja M. Nesius, M.A., *Teacher, Social Studies* (1966).
Oleta R. Post, M.A., *Instructor, English* (1954).
Louise B. Roberts, M.A., *Instructor, Vocational Home Economics* (retired) (1960), 1928.
JoAnn Robinson, B.S., *Teacher, Commerce* (1965).
Kate M. Roller, M.A., *Instructor, Art* (retired) (1955), 1927.
Richard N. Ryan, M.A., *Instructor, Social Studies* (1962), 1959.
Alice V. Semon, M.A., *Instructor, Social Studies* (1962), 1938.
Joseph P. Talerico, M.A., *Instructor, Social Studies and Visual Aids* (1950), 1948.
May L. Wilt, M.A., *Instructor, Mathematics* (retired) (1964), 1925.
Darrell E. Wood, M.M., *Instructor, Music* (1959).
Yvonne M. Woofter, M.A., *Instructor, English* (retired) (1967), 1936.

General Information

In 1901, a Department of Education was established in the College of Arts and Sciences. Subsequently, departments of education evolved in the College of Engineering and the School of Music. In 1927, the College of Education was established and in 1965 the College of Human Resources and Education was created which includes the Divisions of Clinical Studies, Education, Family Resources (formerly Home Economics), Social Work, and the Human Resources Research Institute.

The College brings together the several University disciplines and professions devoted to the study and maximum development of human talent and resources, whether in the context of the school, the family or the community.

STUDENT ORGANIZATIONS

Omicron Nu

Alpha Omicron Chapter of Omicron Nu received its charter at West Virginia University on May 30, 1952. The purposes of this scholastic honorary in home economics are to recognize young women majoring in home economics for their scholastic attainment and professional potentialities and to support and encourage research in home economics.

Kappa Delta Pi

Kappa Delta Pi, national honorary and professional education society, installed Alpha Upsilon Chapter at the University on July 21, 1927. Election is conditioned upon high scholarship and desirable personal and professional qualities.

Phi Delta Kappa

Epsilon Nu Chapter of Phi Delta Kappa, a national fraternity for men in Education, was established November 18, 1961. Membership, by invitation, is composed of leaders and students in Education who are dedicated to research, leadership, and service in Education.

Phi Upsilon Omicron

Phi Upsilon Omicron is a professional organization for home economics. Its purpose is to establish and strengthen bonds of friendship, promote moral and intellectual development, and to advance home economics. Selection of members is made on their scholastic ability, professional attitude, leadership, judgment, reliability, and spirit of service.

Sigma Alpha Eta

A national honorary fraternity for advanced undergraduates and graduates in Speech Pathology and Audiology with local chapters on some 100 college campuses.

Student National Educational Association

S.N.E.A., a national professional Education organization, was chartered at the University on March 5, 1952, and is affiliated with the National Education Association and the West Virginia Education Association. Students interested in teaching may apply for membership.

American Home Economics Association

The West Virginia University Chapter of the American Home Economics Association seeks to encourage the development of professional attitudes and to increase the knowledge of the contributions which home economists can make to family and community living. Membership is open to all students of home economics at West Virginia University.

University 4-H Club

University 4-H Club is sponsored by the 4-H Club Department of the Cooperative Extension Service. Former and present 4-H'ers are invited to join, as well as other college students interested in upholding 4-H ideals. Regular bi-monthly meetings of an educational nature, service projects, and special fun and fellowship activities give real zest to the program.

ADVISER

When the student enters the College of Human Resources and Education he is assigned an adviser who will help him plan his program of work—required courses, electives, examinations, conference courses, etc. Although the adviser desires to be helpful, this does not absolve the student from becoming familiar with all pertinent regulations and planning his program of work in accordance with the objective of his choice.

PLACEMENT

The University maintains a placement service for all students and alumni who are candidates for positions suitable to their preparation. Anyone who is a candidate for a position will, upon application, be furnished registration blanks of the Placement Service. All requests for candidates will be referred to that service.

The Division of Clinical Studies

The Division of Clinical Studies includes the program areas of Counseling and Guidance, Reading, Rehabilitation Counseling, Specal Education, and Speech Pathology and Audiology. The Division offers a Bachelor of Science Degree in Speech Pathology and Audiology, with all other programs being graduate programs. The Doctor's degree is the highest degree approved.

ADMISSION REQUIREMENTS

(B.S., Speech Pathology and Audiology)

1. Fulfill the core curriculum requirements prescribed for lower division students.
2. Present, as a year of laboratory science, either biology or zoology.
3. Include, as electives during the freshman and sophomore years, the following courses.
   General Psychology
   Voice and Diction (Speech)
   Public Speaking (Speech)
   SPA 50
4. Lower division grade point average must be not less than 2.25, including a C or better in SPA 50.
5. For continuation toward a degree, the student must maintain a 2.5 or better average in the subjects in his major field and exhibit the personal and professional qualities predictive of successful performance in the profession.

BACKGROUND

In 1949, West Virginia University established a curriculum in speech correction and audiology and opened a speech and hearing clinic in the Department of Speech. In the years that followed, scores of students were trained in this field and the clinical and academic program was expanded and improved.

In recent years, additional clinical facilities have been opened at the Medical Center and the Speech and Hearing Center on the Downtown Campus has been enlarged.

At the present time, staff members who are trained and certified in both speech and hearing offer courses and supervision of clinical activities in programs leading to the Bachelor of Science, Master of Science, and Doctor of Education degrees.

In addition to the University resources, public school facilities and institutions and clinics in nearby areas are utilized to provide a variety of clinical experiences for students in training.

In 1965, the clinical training program was moved from the Department of Speech to the Division of Clinical Studies of the newly established College of Human Resources and Education. Both the undergraduate and graduate degree programs are now conducted within this academic framework.

UNDERGRADUATE PROGRAM

Undergraduate students may major in Speech Pathology and Audiology. During the first two years, their academic program consists of fulfilling the requirements of the core curriculum, including the traditional general subject areas such as English, science, and the other subjects described on page 49 of this catalog. They are expected to take biology or zoology as the laboratory science and, as time permits,

elect courses in psychology and speech. They also take the survey course in speech correction (SPA 50) in the first semester of the sophomore year.

During the junior and senior years, undergraduates take a variety of specialized courses beginning with offerings such as phonetics and voice science, proceeding through speech pathology, hearing problems, and other courses relating to scientific disorders, and concluding with clinical practice. They also take related courses in psychology and education and sufficient electives to comprise the hours required for their degree. A typical sequence of courses in Speech Pathology and Audiology would include, in addition to SPA 50 mentioned previously, courses numbered 152, 153, 154, 156, 157, 158, 251, 252, 253, 276, and 277.

Upon completion of such a program, they become eligible for a Bachelor of Science degree and will have completed the preparatory undergraduate work enabling them to undertake graduate study in the field, after which they may seek professional employment.

SUGGESTED DISTRIBUTION OF COURSES FOR BACHELOR OF SCIENCE DEGREE IN SPEECH PATHOLOGY AND AUDIOLOGY

FIRST YEAR

Students will take the courses to satisfy the core curriculum requirements, and include either General Biology 1 and 2 or General Zoology 1 and 2 as the laboratory science. Available elective hours should be used to take Speech 3 (or 31) and Psychology 1. (Total semester hours for year—30-36).

SECOND YEAR

Continuation of core curriculum program with available elective hours used for Speech 11 (or 34) and SPA 50.[1] (Total semester hours for year—30-36).

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
SPA 152	3	SPA 154	3
SPA 153	3	SPA 157	3
SPA 156	3	SPA 251	3
Psychology[2] (or other related area)	3	Psychology[2] (or other related area)	3
Electives[3]	3-6	Electives[3]	3-6
	15-18		15-18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
SPA 158	3	SPA 253	3
SPA 252	3	SPA 277	3
SPA 276	3	Psychology[2] (or other related area)	3
SPA 277	3	Electives[3]	6
Psychology[2] (or other related area)	3		
	15		15

The Bachelor of Science program is designed to provide the undergraduate background in speech and hearing science, speech pathology, audiology, and related content areas prerequisite to the continuation of the professional academic program at the graduate level.

As a part of the program and in order to receive credit for Speech 277, students will be required to complete approximately 200 clock hours of supervised clinical practice with cases in the clinics and public schools.

[1]"SPA" = Speech Pathology and Audiology.

[2]Third and fourth year psychology and related area courses will be selected from offerings approved by the student's adviser, and selected from the related area courses applicable toward clinical certification.

[3]Sufficient non-SPA electives should be chosen to make up the hours required for graduation.

This program will enable the student to obtain provisional certification in "speech and hearing therapy" as defined in the 1964 *Standards for Accreditation* bulletin of the West Virginia Board of Education, provided that he has fulfilled the academic course requirements for the General Studies curriculum and has taken the National Teachers Examination. Permanent State certification and eligibility for membership and certification by the American Speech and Hearing Association will require completion of a graduate degree program.

COURSES OF INSTRUCTION

SPA

50. **Speech Correction.** II. 3 hr. Introductory course for those majoring in or interested in majoring in speech pathology or audiology. Fundamentals of evaluation and therapeutic techniques of various oral communication disorders.

152. **Basic Speech and Hearing Science.** I. 3 hr. Consideration of the application of certain principles of the physical and social sciences to an understanding of the process of human oral communication.

153. **Applied Phonetics.** I. 3 hr. A study of the standard speech sounds in our language. Use of symbols for recording speech sounds; application of the use of such symbols in representing various usages of speech; special emphasis on analyzing and recording defective speech. Dynamic concepts studied.

154. **Anatomy of the Speech and Hearing Mechanism.** II. 3 hr. Anatomical and physiological study of the vocal mechanisms and the ear.

156. **Articulation and Voice Disorders.** I. 3 hr. PR: SPA 50 or 250. A detailed consideration of articulation and voice disorders including speech and language retardation and esophageal speech from an etiological, diagnostic, and therapeutic point of view. Diagnostic and therapeutic procedures with these disorders will be developed.

157. **Hearing Problems.** II. 3 hr. PR: SPA 50 or consent. General orientation to the field of audiology and the specialties which are included. A survey of the problems of the hearing-handicapped, basic hearing instruments, measurement procedures, and general goals of hearing therapy.

158. **Bases of Aural Rehabilitation for Children and Adults.** I. 3 hr. PR: SPA 157. Study of the perceptive and behavioral problems of aurally handicapped individuals in society, and approaches to methods of alleviating and compensating for hearing loss.

250. **Survey of Oral Communication Disorders.** II. 3 hr. PR: Consent. A survey of basic concepts and principles of the disorders of speech and their treatment. Primary attention is given to the more common speech deviations. Students observe examination and corrective methods of therapists in the clinic and schools. Normal speech and hearing development of children is considered. This is an orientation course for students majoring in speech as well as teachers, school administrators, psychologists, and rehabilitation workers.

251. **Advanced Speech Correction.** II. 3 hr. PR: SPA 156. Study of the speech-retarded child and organically based speech disorders including cleft palate, cerebral palsy, esophageal speech, and phonation.

252. **Stuttering.** I. 3 hr. PR: SPA 156. Theories and therapies of stuttering.

253. **Profound Organic Speech Disorders.** II. 3 hr. PR: SPA 251 or consent. Speech and language disorders related to cerebral injury. Emphasis on aphasia and aphasia therapeutics. Differential diagnosis of children with delayed speech language.

271. **Diagnostic Audiometrics.** I. 3 hr. PR: SPA 257 and consent. A study of the various audiometric tests outlining the dimensions of hearing. Test administration and interpretation.

272. **Hard of Hearing Therapy.** II. 3 hr. PR: SPA 158 or consent. Bases and procedures of acoustic training and speech reading.

276. **Procedures and Methods in Clinical Speech and Hearing.** I. 3 hr. PR: SPA 156, 157. Principles and methods of diagnosis and appraisal of disorders of communication. Methods of organization and administration of clinical speech and hearing programs in schools, hospitals, community clinics, and state and national services.

277. **Clinical Practice in Speech.** I, II. 1-6 hr. PR: Consent. Supervised diagnosis and therapy of speech disorders. (May be taken for a maximum of 3 semester hours per semester of undergraduate or graduate credit.)

278. **Clinical Practice in Hearing.** I, II. 1-6 hr. PR: Consent. Supervised diagnosis and therapy of hearing disorders. (May be taken for a maximum of 3 semester hours per semester of undergraduate or graduate credit.)

The Division of Education

The Division of Education provides training in most areas of specialization in public-school and higher education. It has resident courses of instruction, facilities for research, the University High School and cooperating public schools for observation, student teaching, directed supervision, and experimentation.

The Division of Education is accredited by the National Council for Accreditation of Teacher Education for the preparation of elementary teachers, secondary teachers, school service personnel and school administrators, with the Doctor's Degree in Education as the highest degree approved.

ORIENTATION AND SELECTION

To assist students in choosing a career in the area of teaching and to maintain adequate standards for admission to teacher-training, the Division of Education requires all students pursuing teacher-education programs to participate in and complete satisfactorily the Orientation and Selection Program. The student is enrolled in this program prior to or concurrently with the first course taken in the Division. The transfer student who has completed the first course in Education at another institution is required to complete the requirements of the Orientation and Selection Program at the University.

WEST VIRGINIA BOARD OF EDUCATION REGULATION FOR CERTIFICATION OF TEACHERS

The West Virginia Board of Education requires that 100 of the 128 semester hours required for certification shall be completed in regularly scheduled campus courses. The 28 hours of permissible nonresidence courses may be earned by extension, home study (correspondence), radio, television, special examinations, and/or military service.

RENEWAL OF PROFESSIONAL CERTIFICATES

Effective September, 1963, all courses for renewal of Professional Certificates are selected in terms of the teacher's objectives for the improvement of instruction and must be recommended by the county superintendent on a form supplied by him. The student should have this completed form when he registers.

METHOD OF COMPUTING GRADE-POINT AVERAGE

The student is responsible for each registration in a course. The grade-point average is computed on *all* work attempted, including work attempted at the University and at other institutions of collegiate grade.

To be eligible for recommendations for the degrees of Bachelor of Science in Secondary Education and Bachelor of Science in Elementary Education, a candidate must:

1. Comply with the general regulations of the University concerning entrance, advanced standing, classification, examination, marks, grade points, etc.
2. Satisfy the following requirements:
   a. Complete the required courses and the minimum number of hours of approved elective courses in Education.
   b. Select and pursue teaching fields for the B.S. Degree in Secondary Education or the B.S. Degree in Elementary Education, except where otherwise prescribed in specific teaching fields.
   c. Adhere to the patterns prescribed in completing the teaching fields.
   d. Present a minimum of 128 hours of approved college credit, with a general average of "C" as described under General Requirements for Certification. The candidate must have completed 26 hours after enrolling in the Division of Education.
   e. Be at least 18 years of age, of good moral character, interested in educational work, and mentally, physically, and otherwise qualified to perform the duties of a teacher.

Fulfillment of the requirements for graduation from the Division of Education, College of Human Resources and Education, qualifies a candidate to apply for recommendation for a West Virginia Professional Certificate.

The College may require appropriate standardized tests of its graduates.

REQUIREMENTS FOR PROVISIONAL PROFESSIONAL CERTIFICATES, GRADES 7-12

Provisional Professional Certificates, Grades 7-12 (valid for 3 years for teaching in junior and/or senior high school) will be issued to applicants who meet the following requirements:

1. Graduation and recommendation by the Dean of the College of Human Resources and Education.
2. General Requirements: Fifteen hours of secondary education, including a course in student teaching, to be selected from the courses applicable for a first-class certificate. Three-fourths of the teaching subject-matter requirements of each division of each teaching field as designed for the Professional Certificate, Grades 7-12.

NEW PROGRAM FOR TEACHER CERTIFICATION

The following pages present a resume of teacher certification standards for all students entering the University beginning September, 1966. Students entering the University prior to September, 1966, may complete the new program if they prefer. By September 1, 1970, all recommendations for certification will be made on the basis of the requirements shown below, or as amended in subsequent catalogs.

General Requirements for Professional Certificates

West Virginia University standards for admission to the teacher education program should not be confused with the minimum State standards for certification. Admissions standards for elementary and secondary education are set forth on pages 329 and 337, respectively.

To teach in the public schools of West Virginia, one must hold a certificate issued by the West Virginia State Department of Education. Before any West Virginia University applicant is eligible to receive a Professional Certificate he must

have: (1) met the minimum State requirements, (2) met the University degree requirements, (3) been recommended by the Dean of the College of Human Resources and Education as herein prescribed and (4) taken the National Teachers Examination (the commons and the appropriate teaching area).

The College will inform each of its students who is a prospective teacher, and any other prospective teacher, upon request, of the requirements for certification and assist him in preparing a program of study to meet these requirements. It is the obligation of the student who desires such counsel to arrange a conference some time before the end of the sophomore year.

A candidate for certification is required to achieve a grade-point average of 2.0 ("C") or better as follows: (1) on the total of college credits earned; (2) on the hours earned in Education; (3) in student teaching; and (4) in each subject specialization.

The Dean of the College recommends candidates for Professional Certificates only after the completion of work for the baccalaureate degree. To be eligible for recommendation by the University for any West Virginia Professional Certificate, the applicant must have done student teaching under the supervision of the College.

At least 45 semester hours of upper-division work, West Virginia University standards, are required for all teaching certificates. The qualifications herein prescribed are minimum, not optimum or maximum, and must be met by all candidates.

PROGRAMS FOR ELEMENTARY EDUCATION TEACHERS, GRADES 1-9

Requirements for the Degree of Bachelor of Science in Elementary Education and for Recommendation for the Professional Certificate, Grades 1-9

Foundation: Lower-Division Work

In preparation for admission to the Division of Education and the work of preparing for teaching in elementary schools, students will register the freshman and sophomore years in the pre-Education program of the College of Arts and Sciences and pursue the program of general education that the State Board of Education has prescribed for all students who seek recommendation for teaching certificates. This program of prescribed work is included in the "Program for Elementary Education Teachers, Grades 1-9."

Training: Upper-Division Work

Admission: For admission to the prescribed courses in Elementary Education (Ed. 105, 106, 141, 142, 143, 144, 145, and 146), students shall register the final two years in the Division of Education. Effective September, 1967, the following will be required:

1. A grade-point average of 2.25 on all work attempted for admission to the Division of Education.
2. A grade-point average of 2.25 on all work attempted for enrollment in the student teaching block.

Subject Matter: In lower-division work students should pursue the lower-division required courses, so that the greatest possible number of hours taken during the junior and senior years may be courses giving upper-class credit.

Graduation and Certification: To become eligible for recommendation for the degree of Bachelor of Science in Education and for the Professional Certificate, Grades 1-9, the student must complete the required curriculum and plan of work with a grade-point average of 2.0 (C) or better, as follows: (1) on the total of college credits earned; (2) on the hours earned in Education; (3) in the subject specialization; and (4) in student teaching; and have been enrolled in the Division of Education for at least 26 semester hours of work, including a minimum of 8 semester hours in student teaching and methods taken at the University.

Program for Undergraduate Elementary Education, Grades 1-9

Required Courses

Sophomore Year

		Hr.
Ed. 100.	Orientation and Selection	1

Junior Year

Ed. 105.	Human Growth and Development—Introduction	3
Ed. 106.	Human Growth and Development—Principles of Learning	3
Ed. 141.	Introduction to Elementary Education	3
Ed. 142.	Reading and Language Arts in the Elementary School	3
Ed. 143.	Mathematics in the Elementary School	2

Senior Year

Ed. 144.	Social Studies in the Elementary School	2
Ed. 145.	Science in the Elementary School	2
Ed. 146.	Student Teaching in the Elementary School	6
or		
Ed. 223*	Clinical Experience in Elementary Education	3
Ed. Elective		0-3
		25

*Students who have had three or more years of teaching experience in the elementary school may, upon recommendation of the Chairman of Elementary Education and approved by the Director of Education, take 3 semester hours of clinical experience in elementary education.

Program for Elementary Education Teachers, Grades 1-9

General Requirements:			Required Semester Hours
Language Arts			18
English 1, 2, Composition and Rhetoric		6	
Speech 3, Voice and Diction			
or			
Speech 11, Principles of Oral Communication		3	
or			
Drama 50, Oral Interpretation			
*English 35, 36, Types of Literature			
or			
*English 127, 128, Introduction to Literature		6	
Library Science 203, Library Materials for Children		3	
Social Science			24
History 1, 2, Western Civilization			
or			
**Humanities 1, 2, Introductory General Course		6 or 8	
**Social Science 1, 2, Introductory General Course		6	
or			
Economics 51 Principles of Economics	3		
and			
Political Science 2, American Federal System	3	9	
and			
Sociology 1, Introduction to Sociology	3		
History 52, 53, Growth of the American Nation		6	

*Students wishing a subject specialization in Language Arts should not take Eng. 35, 36, or 127, 128. See subject specialization for Language Arts.

**Students wishing a subject specialization in Social Science should take History 1, 2 and Economics 51, Political Science 2, and Sociology 1. See subject specialization for Social Science.

		Required Semester Hours
History 150, West Virginia *or* History 250, Economic and Social Development of West Virginia	3	
Geography 7, Introductory Geography Geography 8, Human Geography, *or* Geography 109, Economic Geography	3	
Science		16
Biology 1, 2, General Biology	8	
°°°Physical Science 1, 2, Physical Science	8	
Mathematics		12
Mathematics 6, Arithmetic for Elementary Teachers	3	
Mathematics 270, 271, Introduction to Mathematics for Elementary Teachers	6	
Mathematics 138, Modern Geometry for Teachers	3	
Music		7
Music 10, Appreciation of Music	3	
°°°°Music 11, Music as an Art and Science	2	
°°°°Music 12, Music Materials and Procedures	2	
Art		7
Art 30, Appreciation of the Fine Arts	3	
Art 1, Creative Expression Fine Arts	2	
Art 2, Creative Expression in the Applied Arts	2	
Health and Physical Education		6
Physical Education 1, 2 (Men), General Program *or* Phys. Ed. 41, 42 (Women), Physical Education for Elementary Teachers	2	
Phys. Ed. 43, Physical Education for Elementary Teachers	2	
Health Education 101, Elementary School Health Program	2	
Education		25
Education 100, Orientation and Selection	1	
Education 105, Human Growth and Development: Introduction	3	
Education 106, Human Growth and Development: Principles of Learning	3	
Education 141, Introduction to Elementary Education	3	
Education 142, Reading and Language Arts in the Elementary School	3	
Education 143, Mathematics in the Elementary School	2	
Education 144, Social Studies in the Elementary School	2	
Education 145, Science in the Elementary School	2	
Education 146, Student Teaching in the Elementary School	6	

°°°Students wishing a subject specialization in science, should not take Physical Science. See subject specialization for Science.

°°°°Students wishing a subject specialization in Music should not take Music 11, 12. See subject specialization for Music.

Requirements for Provisional Professional Certificate, Grades 1-9

Provisional Professional Certificates, Grades 1-9 (valid for three years for teaching in the elementary school) will be issued to applicants who:

1. Have an undergraduate degree and the recommendation of the Dean.
2. Are within 18 hours of meeting the requirements for a Professional Certificate, Grades 1-9.
3. Having completed 15 hours of Elementary Education (including a course in student teaching), selected from courses applicable for a Professional Certificate, Grades 1-9.
4. Have completed a part of the required courses in English, social studies, science and mathematics, music, art, and physical education.

Endorsement to Teach in Junior High School

The Professional Certificate, Grades 1-9, *must be endorsed* with at least one subject specialization for teaching in Grades 7 through 9 (junior high school). Below are listed the categories of work for each. For each subject specialization suggested, University courses to implement the State recommendations are listed. The listed courses have been suggested by the departments concerned and approved by the College.

SUBJECT SPECIALIZATION FOR GRADES 5 THROUGH 9

			Required Semester Hours
ART			24
Required Courses:		19	
Art 1. Creative Expression in Fine Arts	2		
Art 2. Creative Expression in Applied Arts	2		
Art 11 or 111. Drawing	3		
Art 113 or 114. Painting	3		
Art 121. Fundamental of Design	3		
Art 126. Modeling	3		
Art 30.* Appreciation of the Arts	3		
b. Approved Electives:		5	
Art 12 or 112. Drawing	3		
Art 113, 114, 117, 118. Painting	3		
Art 122. Fundamental of Design	3		
Art 127. Fundamental of Sculpture	3		
Art 220. Art and the Schools	2		

*Included in the program of General Requirements.

HOME ECONOMICS—GRADES 5-9			24
a. Required Courses			
Clothing and Textiles		6	
TC 2. Principles of Clothing Construction	any two		
TC 17. Textiles	any two		
TC 102. Clothing for the Family	any two	6	
Foods and Nutrition		6	
FN 1. Elementary Nutrition			
or		3	
FN 15. Food Selection and Preparation			
FN 121. Nutrition for the Family			
or		3	
FN 135. Food and People			

		Required Semester Hours
Family Relations and Child Development	6	
CDFR 106. Child Development		
or	3	
CDFR 266. Needs of Adolescents		
CDFR 114. Family Relations		
or	3	
CDFR 264. Family Development		
Home Management, Household Equipment and Family Economics	3	
HMFE 210. Family Economics		
or	3	
HMFE 230. Home Management, Principles and Application		
Housing, Including Home Furnishings	3	
HD 3. Introduction to Related Art		
HD 23. Housing Design *or*	3	
HD 123. Interior Design		

MODERN FOREIGN LANGUAGES—GRADES 1-9

FRENCH		24
a. Required Courses:		
French 1, 2. Elementary French	6	
French 3, 4. Intermediate French	6	
French 103, 104. Elementary Conversation	6	
French 109. Grammar and Pronunciation	3	
French 110. Advanced Conversation	3	
GERMAN		24
a. Required Courses:		
German 1, 2. Elementary German	6	
German 3, 4. Intermediate German	6	
German 103, 104. Spoken German	6	
German 109. Advanced Grammar and Composition	3	
German 110. Advanced Composition and Conversation	3	
RUSSIAN		24
a. Required Courses:		
Russian 1, 2. Elementary Russian	6	
Russian 3, 4. Intermediate Russian	6	
Russian 103, 104. Elementary Conversation	6	
Russian 144, 145. Survey of Russian Literature	6	
SPANISH		24
a. Required Courses:		
Spanish 1, 2. Elementary Spanish	6	
Spanish 3, 4. Intermediate Spanish	6	
Spanish 103, 104. Elementary Conversation	6	
Spanish 109. Grammar and Conversation	3	
Spanish 110. Advanced Conversation	3	

		Required Semester Hours
FOREIGN LANGUAGE		
LATIN		24
a. Required Courses:		
Latin 1, 2. Elementary Latin	6	
Latin 3. Intermediate Latin	3	
Latin 4. Cicero's Orations	3	
Latin 102. Classical Culture and the Modern World	3	
Latin 109. Selections from Roman Prose	3	
Latin 110. Selections from Roman Poetry	3	
Latin 121. Survey of Latin Literature	3	
LANGUAGE ARTS—GRADES 5-9		33
a. Required Courses:		
English 1,* 2.* Composition and Rhetoric	6	
English 111. The English Language	3	
Library Science 203.* Backgrounds of Children's Literature	3	
Speech 3.* Voice and Diction		
or		
Speech 11.* Public Speaking	3	
or		
Drama 50.* Oral Interpretation		
English 142. Shakespeare	3	
English 3,** or 163.** Survey: English Literature I	3	
English 4,** or 164.** Survey: English Literature II	3	
English 5.** American Literature I	3	
English 6.** American Literature II	3	
b. Approved Electives:		
English 118. World Literature	3	
Humanities 141. Great Books I	3	
Humanities 142. Great Books II	3	

*Included in the program of General Requirements.
**These courses waive and supersede English 35, 36 and 127, 128 in the program of General Requirements.

MATHEMATICS—GRADES 5-9		19-22
a. Required Courses:		
Math. 3.** College Algebra	3	
b. Approved Electives:		
Math. 6.* Arithmetic for Teachers	3	
Math. 270, 271. Introduction to Mathematics for the Elementary Teacher	6	
Math. 236. Introduction to Algebraic Structures		
Math. 237. Introduction to Linear Algebra		
or		
Math. 264, 265. Foundations of Algebra.	4-6	
Math. 238. Modern Geometry for Teachers		
or		
Math. 266, 267. Foundations of Geometry	3-4	

*Included in the program of General Requirements.
**Not required of a student whose secondary program in mathematics included equivalent content. In such circumstances the total hours may be lowered accordingly.

		Required Semester Hours
MUSIC—GRADES 1-9		24
a. Required Courses:		
Music 150. Applied Music (Including at least 1 hour in Voice and 1 hour in Piano)	5	
Music 80, 81, 86. (Woodwind or Percussion Cl.)	1	
Music 1, 2. Theory	8	
Music 100, 102, 103, 105. (Band, Orchestra, Choral)	2	
Music 138. Introduction to Music History	3	
Music 183. Conducting	2	
Music 181. Music Education—Elementary	3	

NOTE: Music 11, 12 are not required and do not fulfill requirements for Music as a teaching field.

PHYSICAL AND HEALTH EDUCATION—GRADES 5-9		19
a. Required Courses:		
P.E. 180. The Physical Education Program in the Elementary School		
or		
P.E. 43.° Physical Education for Elementary Teachers	2	
H.Ed. 101. The Elementary School Health Program	2	
P.E. 132. Folk Dancing	2	
S.Ed. 127. Accident Prevention and First Aid	2	
P.E. 71. Orientation in Physical Education	2	
P.E. 175. Anatomy and Kinesiology	5	
P.E. 31, 32. (Women) Team Sports	2	
P.E. 66. (Women) Graded Games and Lead-up Games	1	
P.E. 61. (Women) Stunts, Tumbling, and Trampoline	1	
P.E. 53. (Men) Junior and Senior High School Activities	2	
P.E. 51. (Men) Fundamental of Baseball and Gymnastics	2	
SCHOOL LIBRARIAN—GRADES 5-9		18
a. Required Courses:		
Library Sci. 223. Cataloging and Classification	3	
Library Sci. 101. Reference and Bibliography	3	
Library Sci. 203.° Library Materials for Children	3	
Library Sci. 205. Selection of Books and Related Materials for Secondary School Libraries	3	
Library Sci. 222. Field Practice	3	
Library Sci. 207. School Library Organization and Administration	3	
b. NOTE: Students qualifying for school librarian are advised to take:		
Library Sci. 1. Using Books and Libraries	3	
Library Sci. 235. Library in the Elementary School	3	
Education 221. Audio-Visual Resources for Instruction	3	
SCIENCE—GRADES 5-9		31
Required Courses:		
Biology 1,° 2.° General Biology	8	
°°Chemistry 11, 12. General Chemistry	8	
°°Physics 1, 2. Introductory General Courses	8	
Astronomy 106. Descriptive Astronomy	4	
Geology 5. Introduction to Geology		
and		
Geology 2. Physical Geology Laboratory	4	

°Included in the program of General Requirements.
°°These courses waive and supersede Physical Science 1, 2 in the program of General Requirements.

			Required Semester Hours
Suggested Additional Courses:			
Forestry 140. West Virginia's Natural Resources		3	
Biology 203. Natural History		3	
Biology 204. Biology Workshop		3	
Biology 210. Biological Science for High School Teachers		3	
Botany 266. Flora of West Virginia		3	
Biology 208. Great Texts of Biology		1	
SOCIAL STUDIES—GRADES 5-9			33
a. Required Courses		27	
History 1,* 2.* Western Civilization	6		
Economics 1.** Principles of Economics *and*			
Political Science 2.** American Federal System	9		
and			
Sociology 1.** Introduction to Sociology			
History 52,* 53.* Growth of the American Nation	6		
History 150.* West Virginia	3		
Geography 7.* Introductory Geography			
Geography 8.* Human Geography, *or*			
Geography 109.* Economic Geography	3		
b. Elective Courses		6	
NOTE: Six semester hours, in addition to courses taken in the General Studies program are to be chosen from one of the five areas listed below.			
History 103. Modern Europe 1500-1763		3	
History 104. Modern Europe 1763-1871		3	
History 105. Modern Europe 1871 to Present		3	
History 151. American Colonial and Revolutionary Experience		3	
History 152. The Early Republic, United States		3	
History 153. The United States, 1865-1918		3	
History 154. Recent America, United States		3	
Economics 2. Principles of Economics		3	
and one additional course		3	
Sociology 104. Social Problems		3	
and one additional course		3	
Political Science 1. Elements of Democratic Government		3	
Political Science 120. State and Local Government		3	
Political Science 160. International Relations		3	
Political Science 221. West Virginia Government and Administration		3	
Geography 7.* Introductory Geography			
Geography 8.* Human Geography, *or*			
Geography 109. Economic Geography and one additional course		3	

*Included in the program of General Requirements.
**These courses waive and supersede Social Science 1, 2 in the program of General Requirements.

SPEECH—GRADES 5-9			21
a. Required Courses:		12	
Speech 3.* Voice and Diction			
or	3		
Speech 31. Basic Speech Skills			

Speech 11.* Principles of Oral Communication	
or	3
Speech 34. Basic Speech Skills	
Drama 50.* Oral Interpretation	3
Speech 250. Survey of Oral Communication Disorders	3
Speech 275. Speech Problems of Children	
or	3
Speech 153. Applied Phonetics	
Drama 282. Creative Dramatics	3
Speech 140. Introduction to Broadcasting	3

*Included in program of General Requirements—one of which will have been selected.

PROGRAMS FOR PROFESSIONAL CERTIFICATES JUNIOR AND SENIOR HIGH SCHOOL

Requirements for the Degree of Bachelor of Science in Secondary Education and for Recommendation for the Professional Certificate, Grades 7-12

Foundation: Lower-Division Work

In preparation for admission to the College of Human Resources and Education and the work of preparing for teaching in the junior and senior high school, students will register for the freshmen and sophomore years in the College of Arts and Science and pursue their prescribed programs in preparation for teacher certification under the direction of the pre-education adviser.

Advanced: Upper-Division Work

With the completion of 58 semester hours of approved college work and the attainment of a 2.25 average, a student is eligible to enter the College of Human Resources and Education. To become eligible for recommendation for the degree of Bachelor of Science in Education and for the Professional Certificate, Grades 7-12, the student must complete the requirements described in the General Requirements for the Professional Certificate. The College will lend guidance and advice to students in any other department of the University who desire secondary teacher certification.

An overall grade-point average of 2.25 is required for admission to student teaching.

Program for Secondary Education Teachers

			Required Semester Hours
1. GENERAL STUDIES			50-58
Required Courses			
HUMANITIES (18-22)		21	
English 1, 2. Composition and Rhetoric	6		
Speech 3.* Voice and Diction			
or			
Speech 11.* Principles of Oral Communications	3		
or			
Drama 50.* Oral Interpretation			
English 35, 36.** Types of Literature			
or			
English 127, 128.** Introduction to Literature	6		
Art 30. Appreciation of the Fine Arts	3		
Music 10. Appreciation of Music	3		

*Students who qualify for certification in the field of Speech will take Speech 31 instead of Speech 3, or Speech 34 instead of Speech 11.

**Students who qualify for certification in the field of English or in Language Arts will take English 3, 4 (or 163, 164) and 5, 6 instead of English 35, 36 or English 127, 128.

SCIENCE 8-10

Biology 1, 2. General Biology
or
Physical Science 1, 2.*** Introductory General 8
or
Any one of the following full-year sequences:
Botany 1, 2 8
Chemistry 11, 12 8
Chemistry 15, 16 8
Geology 1, 2 8
Geology 3, 4 8
Physics 1, 2 8
Physics 11, 102 8
Zoology 1, 2 8

***Physical Science 1 and 2 should not be taken by any student who intends to have a teaching field in any one of the sciences.

		Required Semester Hours
MATHEMATICS		4
Math. 21, 22. Introduction to Mathematics	4	
or		
Math. 15. Calculus	4	
SOCIAL STUDIES*		12-17
History 1, 2. Western Civilization	6	
or		
Humanities 1, 2. Introductory General Course	8	
Economics 51. Principles of Economics		
Political Science 2. American Federal System	9	
Sociology 1. Introduction to Sociology		
or		
Social Science 1, 2. Introductory General Course	6	
PHYSICAL AND HEALTH EDUCATION		4- 6
For Men: Physical Education 1, 2	2	
For Women: Four semesters of course work, chosen from Physical Education 3, 4, 5, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 25	4	
Health Education 102	2	

*Students who plan to qualify in the field of Social Sciences should take History 1 and 2 and courses in Economics, Political Science, and Sociology.

PROFESSIONAL EDUCATION—SECONDARY

Required Courses: 21

Psychological Foundation for Teaching 7
Education 100. Orientation and Selection 1
Education 105. Human Growth and Development Introduction 3
Education 106. Human Growth and Development Principles of Learning 3

Management, Materials and Methods 6- 7
Education 120. Principles of Teaching in Secondary Schools 4
(Includes basic work in reading, audio visual and guidance.)
Select *one* below related to student teaching field
Education 150. Science 2
Education 152. Physical Education 2

		Required Semester Hours
Education 153. Foreign Languages	2	
Education 155. Library Science	2	
Education 160. Vocational Agriculture	3	
Education 161. English and Speech	2	
Education 163. Home Economics	2	
Education 164. Industrial Arts	2	
Education 165. Mathematics	2	
Education 167. Social Studies	2	
Education 168. Art	2	
Education 169. Music	2	
Education 170. Commerce	2	
Education 181.* Materials and Processes of Industry	2	
Education 194.* Organization of Industrial Arts	2	
Student Teaching		6
Education 124. Student Teaching	6	
Education 125. Student Teaching (Music)	4	

*Professional education courses required only for Industrial Technology Certification.

Approved Electives:

Education 109. History and Philosophy of the Secondary School	2
Education 221. Audio-Visual Resources for Instruction	3
Education 271. Educational Measurement	3
Education 275. Curriculum Principles and Practices in Gen. Ed.	2

2. SPECIALIZATION—GRADES 7-12

VOCATIONAL AGRICULTURE 50

Required Courses:

Ag. Economics 103. Agricultural Economics	3
Ag. 51. Principles of Animal Science	4
Ag. 52. Principles of Plant Science	4
Agron. 2. Principles of Soil Science	4
Ag. Eng. 10. Principles of Ag. Engineering	3
Ag. Mech. 152. Farm Shop	3
Ag. 11. Professions in Agriculture	1
Ag. 12. Professions in Agriculture	1
Ag. Education 118. Rural Organizations	2

Restricted Electives:

Elect 3 hours:		3
Ag. Mechanics 252. Advanced Farm Mechanics	3	
Ag. Mechanics 253. Advanced Farm Machinery	3	
Ag. Mechanics 270. Electricity in Agriculture	3	
Elect 6 hours:		6
Animal Production 141. Beef Production	3	
Animal Production 162. Sheep Production	3	
Animal Production 103. Poultry Feeding and Management	3	
Animal Production 222. Milk Production	4	
Animal Production 138. Grading and Selection of Meat Animals	2	

		Required Semester Hours
Elect 3 hours:	3	
Forestry 183. Farm Woods Management	3	
Agronomy 210. Fertilizer and Soil Fertility	3	
Agronomy 212. Soil Conservation and Management	3	
Elect 4 hours:	4	
Agronomy 254. Pasture and Forage Crops	4	
Horticulture 240. Horticulture Theory and Procedure I, Tree Fruits and Small Fruits	4	
Horticulture 241. Horticulture Theory and Practice II, Vegetable and Handling Storage	4	
Elect 6 hours	6	
Ag. Economics 104. Farm Management	3	
Ag. Economics 110. Agribusiness and Accounting	4	
Ag. Economics 131. Marketing Agr'l. Products	3	
Ag. Economics 230. Cooperative Marketing	2-3	
Elect 3 hours:	3	
Animal Physiology 100. Animal Physiology	3	
Animal Nutrition 101. Animal Nutrition	3	
Bacteriology 141. General Bacteriology	4	
Genetics 171. Principles og Genetics	3	
Horticulture 107. General Horticulture	3	
ART		33
Required Courses:		
Art 121, 122. Fundamentals of Design	6	
Art 11 or 111. Drawing *and* Art 12 or 112. Drawing	6	
Art 130.* Appreciation of the Arts	3	
Art 105, 106. Survey of Art	6	
Art 113, 114. Painting	6	
Art 127. Fundamental of Sculpture	3	
Art 123. Lettering	3	
Approved Electives:		
Art 126. Modeling	3	
Art 117, 118. Painting	6	

*Included in the program of General Requirements.

BUSINESS EDUCATION (Comprehensive)		35
Accounting 1. Principles of Accounting	3	
Accounting 2. Principles of Accounting	3	
Accounting 111. Intermediate Accounting *or* Accounting 115. Cost Accounting	3	
Mathematics 8. Elementary Mathematics	3	
Business Law 111. Business Law	3	
Marketing 111. Principles of Marketing *or* Marketing 115. Principles of Retailing	3	
Economics 51. Principles of Economics	3	
Economics 52. Principles of Economics	3	
Secretarial Studies 62. Typewriting	2	
Secretarial Studies 126. Shorthand	4	

Secretarial Studies 131. Secretarial Training and Office Practice		3	
Secretarial Studies 132. Transcription		2	
BUSINESS EDUCATION—SECRETARIAL STUDIES			25
Required Courses:		21	
Secretarial Studies 62. Typewriting	2		
Secretarial Studies 126. Shorthand	4		
Secretarial Studies 131. Secretarial Training and Office Practice	3		
Mathematics 8. Elementary Mathematics	3		
			Required Semester Hours
Accounting 1. Principles of Accounting	3		
Accounting 2. Principles of Accounting	3		
Secretarial Studies 132. Transcription	3		
Elective Courses:		4	
Secretarial Studies 51. Business Communications	3		
Secretarial Studies 61. Typewriting	2		
Secretarial Studies 125. Shorthand	4		
Accounting 111. Intermediate Accounting	3		
Accounting 115. Cost Accounting	3		
Economics 51. Principles of Economics	3		
Economics 52. Principles of Economics	3		
ENGLISH			36
Required Courses:			
English 1,* 2.* Composition and Rhetoric	6		
English 111. The English Language		3	
English 3 or 163. Survey: English Literature (I)		3	
English 4 or 164. Survey: English Literature (II)		3	
English 5. American Literature (I)		3	
English 6. American Literature (II)		3	
English 142. Shakespeare		3	
Upper-Division Course in American Literature (166, 250, 270)		3	
Upper-Division Course in a major author or period before 1660 (140, 141, 234, 244, 245)		3	
Upper-Division Course in a major author or period after 1660 (138, 139, 247, 248, 249, 257, 258)		3	
Upper-Division Course including foreign literature in English translation (English 118, 278, 280; Humanities 141, 142)		3	
Speech 3.* Voice and Diction		3	
or			
Speech 11.* Principles of Oral Communication			
or			
Drama 50.* Oral Interpretation			

*Included in the program of General Requirements.

NOTE: For students in the English program, the courses in English, American, and foreign literature supersede and waive the requirement of English 35 and 36 or 127 and 128 in General Studies.

Required Semester Hours

MODERN FOREIGN LANGUAGES

FRENCH 36

Required Courses:

French 1. Elementary French	3
French 2. Elementary French	3
French 3. Intermediate French	3
French 4. Intermediate French	3
French 103. Elementary Conversation	3
French 104. Elementary Conversation	3
French 109. Grammar and Conversation	3
French 110. Advanced Conversation	3
French 115. The Classical School	3
French 118. Literature of the 19th Century	3
French 217. French Civilization	3
Linguistics 111. Introduction to Structural Linguistics	3

Approved Electives:*

French 116. Literature of the 19th Century	3
French 222. French Realism	3
French 231. Phonetics and Pronunciation	3

*These courses may be chosen to complete the 36-hour program of a student who, because of high-school credits, has been excused from elementary or intermediate courses. They may be substituted for French 118 and 217 with the approval of the adviser.

FRENCH (As another field) 24

Required Courses:

French 1. Elementary French	3
French 2. Elementary French	3
French 3. Intermediate French	3
French 4. Intermediate French	3
French 103. Elementary Conversation	3
French 104. Elementary Conversation	3
French 109. Grammar and Conversation	3
French 110. Advanced Conversation	3

Approved Electives:*

French 118. Literature of the 19th Century	3
French 217. French Civilization	3
French 222. French Realism	3

*These courses may be chosen to complete the 24-hour program of a student who, because of high school credits, has been excused from elementary or intermediate courses.

NOTE: Students selecting German, Spanish, or Russian as a specialization may qualify for teaching French by completing the 24-semester-hour program.

GERMAN 36

Required Courses:

German 1. Elementary German	3
German 2. Elementary German	3
German 3. Intermediate German	3
German 4. Intermediate German	3
German 103. Spoken German	3
German 104. Spoken German	3
German 105. The German Novelle	3
German 106. The German Novelle	3
German 107. Nineteenth Century Drama	3
German 109. Advanced Grammar and Composition	3
German 110. Advanced Grammar and Composition	3
Linguistics 111. Introduction to Structural Linguistics	3

		Required Semester Hours
Approved Electives:*		
German 108. Nineteenth Century Drama	3	
German 161. Lyric Poetry	3	

*These courses may be chosen to complete the 36-hour program of a student who, because of high-school credits, has been excused from elementary or intermediate courses. They may be substituted for German 106 and 107 with the approval of the adviser.

GERMAN (As another field)		24
German 1. Elementary German	3	
German 2. Elementary German	3	
German 3. Intermediate German	3	
German 4. Intermediate German	3	
German 103. Spoken German	3	
German 104. Spoken German	3	
German 109. Advanced Grammar and Composition	3	
German 110. Advanced Grammer and Composition	3	
Approved Electives:*		
German 106. The German Novelle	3	
German 107. Nineteenth Century Drama	3	

*These courses may be chosen to complete the 24-hour program of a student who, because of high-school credits, has been excused from elementary or intermediate courses.

NOTE: Students selecting French, Russian or Spanish as a specialization may qualify for teaching German by completing the 24-semester-hour program.

RUSSIAN		33
Required Courses:		
Russian 1. Elementary Russian	3	
Russian 2. Elementary Russian	3	
Russian 3. Elementary Russian	3	
Russian 4. Intermediate Russian	3	
Russian 103. Elementary Conversation	3	
Russian 104. Elementary Conversation	3	
Russian 144. Survey of Russian Literature	3	
Russian 145. Survey of Russian Literature	3	
Russian 211. The Russian Novel	3	
Russian 212. The Russian Novel	3	
Linguistics 111. Introduction to Structural Linguistics	3	

RUSSIAN (As another field)		24
Required Courses:		
Russian 1. Elementary Russian	3	
Russian 2. Elementary Russian	3	
Russian 3. Elementary Russian	3	
Russian 4. Intermediate Russian	3	
Russian 103. Elementary Conversation	3	
Russian 104. Elementary Conversation	3	
Russian 144. Survey of Russian Literature	3	
Russian 145. Survey of Russian Literature	3	
Approved Electives:*		
Russian 211. The Russian Novel	3	
Russian 212. The Russian Novel	3	

*These courses may be chosen to complete the 24-hour program of a student who, because of high-school credits, has been excused from elementary or intermediate courses.

NOTE: Students selecting German, French or Spanish as a specialization may qualify for teaching Russian by completing the 24-semester-hour program.

	Required Semester Hours
SPANISH	36

Required Courses:

Spanish 1. Elementary Spanish	3
Spanish 2. Elementary Spanish	3
Spanish 3. Intermediate Spanish	3
Spanish 4. Intermediate Spanish	3
Spanish 103. Elementary Conversation	3
Spanish 104. Elementary Conversation	3
Spanish 109. Grammar and Conversation	3
Spanish 110. Grammar and Conversation	3
Spanish 212. Spanish Literature Since 1870	3
Spanish 216. Spanish Civilization and Culture	3
Spanish 221. Literature of the Golden Age to 1635	3
Linguistics 111. Introduction to Structural Linguistics	3

Approved Electives:*

Spanish 211. 19th Century Literature to 1870	3
Spanish 217. Spanish-American Literature and Culture	3
Spanish 222. The Golden Age to Lope de Vega	3

*These courses may be chosen to complete the 36-hour program of a student who, because of high-school credits, has been excused from elementary or intermediate courses. They may be substituted for Spanish 212 and 216 with the approval of the adviser.

SPANISH (As another field)	24

Required Courses:

Spanish 1. Elementary Spanish	3
Spanish 2. Elementary Spanish	3
Spanish 3. Intermediate Spanish	3
Spanish 4. Intermediate Spanish	3
Spanish 103. Elementary Conversation	3
Spanish 104. Elementary Conversation	3
Spanish 109. Grammar and Conversation	3
Spanish 110. Grammar and Conversation	3

Approved Electives:*

Spanish 212. Spanish Literature Since 1870	3
Spanish 216. Spanish Civilization and Culture	3
Spanish 217. Spanish-American Literature and Culture	3
Spanish 222. The Golden Age to Lope de Vega	3

*These courses may be chosen to complete the 24-hour program of a student who, because of high-school credits, has been excused from elementary or intermediate courses.

NOTE: Students selecting French, German, or Russian as a specialization may qualify for teaching Spanish by completing the 24-semester-hour program.

FOREIGN LANGUAGE

LATIN	30

Required Courses:

Latin 1. Elementary Latin	3
Latin 2. Elementary Latin	3
Latin 3. Intermediate Latin	3
Latin 4. Cicero's Orations	3
Latin 109. Selections from Roman Prose	3
Latin 110. Selections from Roman Poetry	3
Latin 121. Survey of Latin Literature	3
Latin 202. Drama	3
Latin 231. Satire	3
Linguistics 111. Introduction to Structural Linguistics	3

		Required Semester Hours
Approved Electives:*		
Latin 234. History	3	
Latin 235. Epic	3	

*These courses may be chosen to complete the 30-hour program of a student who, because of high-school credits, has been excused from elementary or intermediate courses. They may be substituted for any of the literature courses above with the approval of the adviser.

HEALTH, PHYSICAL AND SAFETY EDUCATION		38
Required Courses:		
P.E. 177. History and Principles of Physical Education	3	
P.E. 176. The Adapted Program in Physical Education	2	
P.E. 175. Anatomy and Kinesiology	5	
Zoology 271. Human Physiology	4	
H.Ed. 2. Personal and Community Health	2	
H.Ed. 102. The Secondary School Health Program	2	
P.E. 278. Administration of Physical Education	3	
S.Ed. 181. Principles of Safety Education	2	
P.E. 121. Athletic Training and First Aid	2	
S.Ed. 128. Accident Prevention and First Aid	2	
Physical Education Activity Area (To be taken by women)		13
P.E. 5. Ballroom Dance	1	
P.E. 31. Team Sports	1	
P.E. 32. Team Sports	1	
P.E. 33. Swimming and Diving	1	
P.E. 35. Modern Dance Techniques	1	
P.E. 36. Movement and Its Rhythmic Structure	2	
P.E. 54. Individual and Dual Sports	2	
P.E. 61. Stunts, Tumbling, and Trampoline	1	
P.E. 63. Hockey and Volleyball	1	
P.E. 127. Accident Prevention and First Aid	2	
P.E. 132. Folk Dancing	1	
P.E. 66. Graded Games and Lead-up Games	1	
Physical Education Activity Area (To be taken by men)		13
P.E. 5. Ballroom Dance	1	
P.E. 51. Fundamental of Tumbling and Gymnastics	2	
P.E. 52. Advanced Swimming, Lifesaving, and Water Safety	1	
P.E. 53. Junior and Senior High School Activities and Games	2	
P.E. 54. Individual and Dual Sports	2	
P.E. 55. Fundamentals of Baseball, Basketball, and Wrestling	2	
P.E. 56. Fundamentals of Track and Football	2	
P.E. 132. Folk Dancing	1	

			Required Semester Hours
HOME ECONOMICS (Comprehensive)			40
Required Courses:		15	
CDFR 114. Family Relations	3		
TC 2. Principles of Clothing Construction	3		
FN 1. Elementary Nutrition	3		
HMFE 230. Home Management, Principles and Application	3		
HD 3. Introduction to Related Art	3		
Restricted Electives:		25	
Elect 5 hours:			
CDFR 106. Child Development	3		
CDFR 266. Needs of Adolescents	3		
CDFR 264. Family Development	3		
CDFR 126. Infant Development	2		
Elect 5 hours:			
TC 17. Textiles	3		
TC 102. Clothing for the Family	3		
TC 222. Tailoring	3		
TC 217. Textiles for the Consumer	3		
Elect 5 hours:			
FN 15. Food Selection and Preparation	3		
FN 115. Meal Planning, Preparation, and Service	3		
FN 221. Community Nutrition Problems	2		
FN 135. Food and People	3		
Elect 5 hours:			
HMFE 210. Family Economics	3		
HMFE 250. Household Equipment	2		
HMFE 120. Demonstration Techniques	2		
Elect 5 hours:			
HD 23. Housing Design	3		
HD 123. Interior Design	3		
HD 223. Advanced Interior Design	3		
INDUSTRIAL TECHNOLOGY GENERAL SHOP ENDORSEMENT			28
Required Courses:			
General Shop			
Education (IA) 107. General Shop 1	3		
Education (IA) 108. General Shop 2.	3		
Woodworking			
Education (IA) 102. Hand Woodworking	2		
Education (IA) 103. Machine Woodworking	2		
Metals			
Education (IA) 104. Cold Metals	2		
Education (IA) 112. Hot Metals	2		
Industrial Crafts			
Education (IA) 121. Industrial Arts Crafts	2		
Drafting			
Education (IA) 173. Technical Drawing 1	2		
Education (IA) 174. Technical Drawing 2	2		

Electricity and Electronics

Education (IA) 131. General Electricity 1	2
Education (IA) 132. General Electricity 2	2

Graphics

Education (IA) 180. Industrial Arts Graphics	2

Industrial Arts Laboratory Maintenance

Education (IA) 110. Maintenance and Construction of Industrial Arts Equipment	2

	Required Semester Hours in One Area
INDUSTRIAL TECHNOLOGY UNIT SHOP ENDORSEMENT*	6

Required Courses:

Metals

Education (IA) 240. Art Metal and Jewelry	3
Industrial Engineering 11. Machine Work	2
Industrial Engineering 7. Welding and Heat Treatment	1
or	
Industrial Engineering 15. Welding, Forming, and Heat Treatment	2
Industrial Engineering 100. Manufacturing Processes	3

Woods

Education (IA) 204. Advanced Woodworking, Construction and Finishing	3
Education (IA) 242. Upholstery and Finishing	3

Drawing

Education (IA) 238. Design in Industrial Education	3
Education (IA) 249. Sheet Metal Pattern Development	3
Art 123.** Lettering	2

Graphics

Education (IA) 246. Advanced Industrial Arts Graphics	3
Physics 116. Photography	3
or	
Physics 257. Photography	3

Crafts

Education (IA) 243. Advanced Ceramics	3
Education (IA) 244. Advanced Industrial Arts Crafts	3

*Unit shop endorsement cannot be used as a second single subject specialization. Comprehensive field is not offered.

**Included in the Art Program.

		Required Semester Hours
JOURNALISM		21
Required Courses:	15	
Journalism 1. Introduction to Mass Communications	2	
Journalism 18. News Writing	3	
Journalism 19. Copy Editing and Makeup	3	
Journalism 120. News Photography	2	
Journalism 215. High-School Journalism	2	
Journalism 227. History of Journalism	2	

		Required Semester Hours
Approved Electives:		6
Journalism 2. Lectures in Journalism	1	
Journalism 110. Typography and Printing Processes	2	
Journalism 113. Principles of Advertising	3	
Journalism 118. Reporting	3	
Journalism 122. Radio and Television Reporting	2	
Journalism 201. Interpreting Current Events	1	
Journalism 228. Law of News Media	3	
Journalism 230. Editorial Writing	3	
Journalism 241. Journalism Problems	1-3	

NOTE: All electives listed may be counted toward a Bachelor's Degree in Journalism Education.

LANGUAGE ARTS (Comprehensive)		51
ENGLISH		
English 1,* 2.* Composition and Rhetoric	6	
English 111. The English Language	3	
English 3 or 163. Survey: English Literature (I)	3	
English 4 or 164. Survey: English Literature (II)	3	
English 5. American Literature (I)	3	
English 6. American Literature (II)	3	
English 142. Shakespeare	3	
Upper-Division Course in American Literature (166, 250, 270)	3	
Upper-Division Course in a major author or period before 1660 (140, 141, 234, 244, 245)	3	
Upper-Division Course in a major author or period after 1660 (138, 139, 247, 248, 249, 257, 258)	3	
Upper-Division Course including foreign literature in English translation (English 118, 278, 280; Humanities 141, 142)	3	
(All English courses listed above, except English 1 and 2, appear in the English program.)		
SPEECH (15 hours)		
Speech 3.* Voice and Diction		
or		
Speech 11.* Principles of Oral Communication	3	
or		
Drama 50.* Oral Interpretation		
Speech 121. Argumentation and Debate	3	
Drama 75. Acting	3	
Drama 180. Directing	3	
(Speech 121, Drama 75 and 180 appear in the Speech program.)		
JOURNALISM (5 hours)		
Journalism 215. High School Journalism	3	
Journalism 18. News Writing	3	
(These two courses appear in the Journalism program.)		

*Included in the program of General Studies.

NOTE: For the student completing the Language Arts field, the requirements here listed supersede and waive the requirement of English 35 and 36, or 127 and 128, in General Studies.

		Required Semester Hours
MATHEMATICS		20
Required Courses:		
Math. 3.° College Algebra	3	
Math. 4.° Plane Trigonometry	3	
Math. 15.°° Calculus I	4	
Math. 16. Calculus II	4	
Math. 236. Introduction to Algebraic Structures		
or		
Math. 264, 265. Foundations of Algebra	3-4	
Math. 138. Modern Geometry for Teachers		
or 238		
Math. 266, 267, or 243. Foundations of Geometry	3-4	

°NOTE: Not required of a student whose secondary program in mathematics included equivalent content. In such circumstances the total hours may be lowered accordingly.
°°Included in the program of General Studies.

MATHEMATICS (Comprehensive)		30
Required Courses:		
Math. 3.° College Algebra	3	
Math. 4.° Plane Trigonometry	3	
Math. 15.°° Calculus I	4	
Math. 16. Calculus II	4	
Math. 17. Calculus III	4	
Math. 236. Introduction to Alebraic Structures		
Math. 237. Introduction to Linear Algebra		
or		
Math. 264, 165. Foundations of Algebra	6-4	
Math. 138. Modern Geometry for Teachers		
or 238		
Math. 266, 267, or 243. Foundations of Geometry	3-4	
Approved Electives:		
Math. 208. Theory of Probability		
or		
Math. 268, 269. Probability and Statistics	3-4	
Math. 235. Foundations of Algebra and Analysis	3	
Math. 220. Numerical Analysis	3	

°NOTE: Not required of a student whose secondary program in mathematics included equivalent content. In such circumstance the total hours may be lowered accordingly.
°°Included in the program of General Studies.

MUSIC (Comprehensive)		69-75
Required Courses:		
Music 1. Theory	4	
Music 2. Theory	4	
Music 3. Theory	4	
Music 4. Theory	4	
Music 80-86. Instrumental Classes	5-7	
Music 117. Instrumentation		
Music 118. Orchestration and Band Arranging	2-4	
Music 120. Choral Arranging		
Music 140, 141. History of Music	6	
Music 181, 182 (Elem. 3; Sec. 3)	6	
Music 183, 184. Conducting	4	

	Required Semester Hours
Music 100-105	8-10
Music 100. Band	
Music 102. Choral Union	
Music 103. Univ. Symphony Orchestra	
Music 105. Choir	
Music 150. Applied Music	22
Instruments 5-16	
Piano 4-16	
Voice 2-16	
(The student completes Level 7* technical proficiency in Music 150 which requires the equivalent of 16 hours of Instrument, or Piano, or Voice study, and the minimum as shown by the first figure in each of the other two Applied areas.)	

Approved Electives:**

Music 20. Introduction to Opera Theatre	2
Music 210. Opera Theatre	2
Music 155. Chamber Music	1
Music 252. Analysis of Musical Form	3

*For explanation of "Level 7", see the Music section of this *Catalog*.

**Although no electives are included in the requirements for the degree or the certificate, it is recommended that the student take as many of the "approved electives" as possible.

SAFETY EDUCATION* 15

Required Courses:

S.Ed. 181. Principles of Safety Education	2
S.Ed. 182. Techniques and Procedures in Driver and Traffic Safety Education	3
S.Ed. 282. Problems in Driver and Traffic Safety Education	3

Approved Electives:

P.E. 52. Advanced Swimming, Lifesaving, and Water Safety	1
P.E. 121. Athletic Training and First Aid	2
P.E. 124. Instructorship in Swimming, Lifesaving, and Water Safety	1
S.Ed. 127. Accident Prevention and First Aid	2
S.Ed. 280. Programs in Safety Education	3
S.Ed. 281. Driver and Traffic Safety Education Programs	3
S.Ed. 283. Philosophy of Safety Education	3
(S.Ed. 127, 181 and P.E. 52, 121 appear in Health, Physical and Safety Education Program.)	

*Approved as a third area of specialization or a second area of specialization with a comprehensive program for grades 7-12.

NOTE: Students with specialization in Safety Education should select Education 221 as part of their program of Professional Education.

SCHOOL LIBRARIAN 18

Required Courses:*

Library Science 223. Cataloging and Classification	3
Library Science 101. Reference and Bibliography	3
Library Science 207. School Library Organization and Administration	3
Library Science 203. Library Materials for Children	3

			Required Semester Hours
Library Science 205. Selection of Books and Related Materials for Young People	3		
Library Science 222. Field Practice	3		
Approved Elective:			
Library Science 1. Using Books and Libraries	3		

*Students qualifying for certification in this field must elect Education 221, Audio-Visual Resources for Instruction, as part of their program of Professional Education.

SOCIAL STUDIES (Comprehensive)			48
HISTORY		24	
Required Courses:			
History 1,* 2.* Western Civilization	6		
History 52. Growth of the American Nation to 1865	3		
History 53. Making of Modern America	3		
Upper-Division Course in American History.**		3	
History 150. West Virginia	3		
History 151. The American Colonial and Revolutionary Experience	3		
History 152. The Early Republic, United States	3		
History 153. The United States, 1865 to 1918	3		
History 154. Recent America, United States Since 1918	3		
Approved Electives: (May include an additional course in American History, listed above)		9	
History 103. Modern Europe, 1500-1763	3		
History 104. Modern Europe, 1763-1871	3		
History 105. Modern Europe, 1871 to present	3		
History 106. British Civilization to 1660	3		
History 107. British Civilization Since 1660	3		
GOVERNMENT		6	
Political Science 2.* The American Federal System	3		
One of the following:	3		
Political Science 1. Elements of Democratic Government			
Political Science 120. State and Local Government			
Political Science 160. International Relations			
Political Science 221. West Virginia Givernment and Administration			
ECONOMICS		6	
Economics 51.* Principles of Economics	3		
Economics 52. Principles of Economics	3		
SOCIOLOGY		6	
Sociology 1.* Introduction to Sociology	3		
Sociology 104. Social Problems	3		

*Included in the program of General Studies.
**Students certifying in West Virginia shall include History 150 among their electives.
NOTE: The student who expects to qualify for certification in Social Studies is advised to take the following courses in the program of General Studies: History 1 and 2; Economics, Sociology, and Political Science.

		Required Semester Hours
GEOGRAPHY	6	
Geography 7. Introduction to Geography	3	
Geography 109. Economic Geography	3	
SPEECH		36
Required Courses:		
Speech 3.* Voice and Diction		
or		
Speech 31. Basic Speech Skills	3	
Speech 11.* Principles of Oral Communication		
or		
Speech 34.* Basic Speech Skills	3	
Speech 120. Group Discussion	3	
Speech 121. Argumentation and Debate	3	
Drama 50.* Oral Interpretation	3	
Drama 75. Acting	3	
Drama 100. Stagecraft	3	
Drama 180. Directing		
or		
Drama 282. Creative Dramatics	3	
Speech 250. Oral Communication Disorders	3	
Speech 140. Introduction to Broadcasting	3	
Speech 141. Radio and Television Announcing	3	
Speech 153. Applied Phonetics	3	

*Included in the program of General Requirements.

**Speech 31 and 34 are for students who qualify for certification in the field of Speech. The requirements supersede Speech 3 and 11 in the program of General Studies. Of the Drama options, Drama 180 is for teachers certifying for grades 7-12; Drama 282 is for those certifying for grades 5-9.

THE SCIENCES

BIOLOGICAL AND GENERAL SCIENCE (Comprehensive)		46-48
Required Courses:		
Biology 1,* 2.* General Biology	8	
Botany 204. Plant Kingdom		
or		
Botany 171. Plant Physiology	4	
Zoology 271. Human Physiology		
or		
Zoology 251. Invertebrate Zoology	4	
Biology 203. Natural History		
Biology 205. Principles of Evolution		
Biology 215. Cytology		
Biology 221. General Biology	3-4	
Bacteriology 141. General Bacteriology		
Genetics 171. Principles of Genetics	3-4	
Genetics 172. Genetics Laboratory		
Chem. 11,* 12. General Chemistry	8	
Physics 1,* 2.* General Physics	8	
Geology 1.* Physical Geology	3	
Geology 2.* Physical Geology Lab.	1	
Geology 3.* Historical Geology	3	
Geology 4.* Historical Geology Lab.	1	
Astronomy 106. Descriptive Astronomy	3	

*Included in the program of General Studies.

NOTE: A student who wishes to qualify for a specialization in chemistry, physics or biological science may omit elements of geology and astronomy, but will be required to complete a second specialization.

		Required Semester Hours
PHYSICS AND GENERAL SCIENCE (Comprehensive)		47-51
Required Courses:		
Physics 1,* 2.* Introduction to Physics		
Physics 109, 110. A Problem Course in General Physics	8-12	
or		
Physics 11.* General Physics		
Physics 102.* General Physics		
Physics 125, 126. Modern Physics for Engineers	6	
Chemistry 11,* 12.* General Chemistry	8	
Geology 1.* Physical Geology	3	
Geology 2.* Physical Geology Lab.	1	
Geology 3.* Historical Geology	3	
Geology 4.* Historical Geology Lab.	1	
Astronomy 106. Descriptive Astronomy	3	
Biology 1,* 2.* General Biology	8	
Approved Electives:		6
Physics 113, 114. Introductory Electronics	6	
Physics 116. Photography	3	
Physics 117. Descriptive Meteorology	3	
Physics 221. Optics	3	

*Included in the program of General Studies.

NOTE: A student who wishes to qualify for a specialization in chemistry, physics or biological science may omit elements of geology and astronomy, but will be required to complete a second specialization.

CHEMISTRY AND GENERAL SCIENCE (Comprehensive)		46-48
Required Courses:		
Chem. 11,* 12.* General Chemistry	8	
Chem. 115. Quantitative Analysis	3	
Chem. 131. Organic Chemistry		
or		
Chem. 133. Organic Chemistry	3	
Chem. 141. Physical Chemistry	4	
Physics 1,* 2.* Introd. Physics	8	
Geology 1.* Physical Geology	3	
Geology 2.* Physical Geology Laboratory	1	
Geology 3.* Historical Geology	3	
Geology 4.* Historical Geology, Laboratory	1	
Astronomy 106. Descriptive Astronomy	3	
Biology 1,* 2.* General Biology	8	
Approved Electives:		
Chem. 221. Intermediate Inorganic Chemistry	3	
Geology 151. Structural Geology	3	
Mineralogy 184. (Geology)	4	

*Included in the program of General Studies.

NOTE: A student who wishes to qualify for a specialization in chemistry, physics or biological science may omit elements of geology and astronomy, but will be required to complete a second specialization.

COURSES OF INSTRUCTION*

No courses in Education except Ed. 100, 102 (IA), 103 (IA), 104 (IA), 105, 106, 107 (IA), 108 (IA), and 112 (IA) are open to sophomores. The following courses are required of teachers for recommendation for a Professional Certificate Grades 7-12: Ed. 100, 105, 106, 120, 124, 150-170, and enough additional hours chosen from the following approved electives to meet the minimum requirements of 21 hours in Education: Ed. 109, 150-170 in a second teaching field, 221, 251, 259, 262, 270, 271, 275, 276, 277, 284, and 285. The following courses are required of teachers for recommendation for a Professional Certificate, Grades 1-9: Ed. 100, 105, 106, 141, 142, 143, 144, 145, and 146.

100. **Orientation and Selection.** I, II. S. 1 hr. Open to sophomores and above. Acquaints students with selective processes necessary for admission to the Division of Education or the student teaching program and assists the teacher trainee in self evaluation through counseling and testing.

102. **Hand Woodworking (IA).** I. 2 hr. Design and construction of small projects suitable for secondary schools involving hand woodworking skills, tools, materials and processes. Open to lower-division students.

103. **Machine Woodworking (IA).** II. 2 hr. Development of skill in use of the common power woodworking machines. Open to lower-division students.

104. **Cold Metals (IA).** I. 2 hr. Layout, planning and construction in sheet metal and ornamental iron. Open to lower-division students.

105. **Human Growth and Development—Introduction.** I, II, S. 3 hr. Open to sophomores or above. Emphasis upon competencies in understanding and applying principles involved in the growth and development of children and youth.

106. **Human Growth and Development—Principles of Learning.** I, II, S. 3 hr. PR: Ed. 100, 105. Continuation of Ed. 105 with special attention to the principles of learning. Open to sophomores or above.

107. **General Shop 1 (IA).** I. 3 hr. Basic course in the practice and techniques involved in the areas of printing, bench-metal work, forging, foundry, and project planning. General shop organization emphasized.

108. **General Shop 2 (IA).** II. 3 hr. PR: Ed. 107 (IA). Continuation of Ed. 107 (IA). Emphasis on planning and project construction in electricity, metals, including welding (gas and arc), metal lathe turning, spinning, cold forming, and wood patternmaking.

109. **History and Philosophy of the Secondary School.** I, II. 2 hr. PR: Ed. 105, 106. Significant historical developments giving rise to the modern secondary school; the nature and function of the secondary school in an emerging new world order; influence on curriculum and instruction.

110. **Maintenance and Construction of Industrial Arts Equipment (IA).** I, II, S. 2 hr. PR: Ed. 102 (IA), 104 (IA), and consent. Study of school shop maintenance problems and their solution, including the construction of certain types of equipment.

112. **Hot Metals (IA).** II. 2 hr. Foundry practice, forging, gas and electric welding, construction of patterns and jigs. Open to lower-division students.

115. **Student Teaching in Elementary-School Music.** I, II. 3 hr. Observation and practice of teaching music to pupils in grades 1 through 6. Open to seniors who have completed 27 semester hours in music and 7 semester hours in Education with a grade-point average of 2.0 (C) in each and an overall grade-point average of 2.25.

*Ed. 100 and Ed. 105 are prerequisite to all other courses in Education.

120. **Principles of Teaching in Secondary Schools.** I, II, S. 4 hr. PR: Open only to those who qualify for the student teaching block.

121. **Industrial Arts Crafts (IA).** I. 2 hr. Construction activities suitable for secondary schools in such media as leather, plastics, and ceramics.

124. **Student Teaching.** I, II, S. 4-6 hr. PR: Ed. 100, 105, and 106. Open only to seniors and graduate students, regularly enrolled in the University, who meet the following requirements:

1. Completion of 75 per cent of the hours required in each of two teaching fields and completion of Ed. 100, 105 and 106, with a minimum overall grade-point average of 2.25 and a minimum grade-point average of 2.0 (C) in each teaching field and in Education.*
2. An applicant for student teaching must submit positive evidence that he (or she) meets the requirements of physical condition and emotional stability necessary for the performance of the duties of a teacher. Such evidence must come from the University Health Service on a form used by the Division of Education.
3. This course must be taken concurrently with Ed. 120 and the appropriate course of Ed. 150-170, unless exceptions have previously been made with the Director of Secondary Student Teaching. A period of 3 hours daily must be reserved for this and simultaneous courses for purposes of observation, discussion, and planning.
4. The second Monday in each calendar month, 7 to 9 p.m., must be reserved for teachers' meetings.
5. Admission is by application made early in the preceding semester to the Chairman of Undergraduate Secondary Education.
6. The adviser is responsible for furnishing a check of the student's record to determine eligibility.
7. Students with no teaching experience are expected to take this course during the academic year.

125. **Student Teaching in Secondary-School Music.** I, II. 4 hr. PR: Same requirements as Ed. 124 except in hours' credit needed.

127. **Material and Methods in Public-School Speech and Hearing Therapy.** I, II, S. 2-4 hr. PR: Consent. Includes experience in Grades 1 to 12. Three semester hours of this course may be earned by registering in Speech 276.

128. **Clinical Practices in Public-School Speech and Hearing Therapy.** I, II, S. 2-8 hr. PR: Consent. Includes experience in Grades 1 to 12. This course meets the requirements of Speech 277 and 278.

130. **Materials and Methods in Elementary-School Music.** I, II. 2 hr. (To be taken concurrently with Ed. 115.)

131. **General Electricity 1 (IA).** I. 2 hr. Study if basic electrical theory and its application in secondary-school teaching. Laboratory work involves the construction of electrical projects suitable for developing an understanding of electrical theory.

132. **General Electricity 2 (IA).** II. 2 hr. PR: Ed. 131 (IA). Continuation of Ed. 131 (IA) with an introduction to radio, involving crystals, transistors, and tubes.

141. **Introduction to Elementary Education.** I, II, S. 3 hr. PR: Ed. 100 and 105 and enrollment in the Division of Education. Introduction to elementary education including observation and participation in public schools. Principles of elementary education will be related to principles of learning in Education 106. Analysis of professional problems and procedures will be an integral part of the course. (To be taken concurrently with Ed. 106, 142, and 143.)

*All work taken within the area of a teaching field will be used in the computation of the grade-point average for that field regardless of whether the work is required for the teaching field.

142. **Reading and Language Arts in the Elementary School.** I, II, S. 3 hr. PR: Ed. 100, 105, and enrollment in the elementary undergraduate program. This course covers instructional practices in all phases of the language arts. (To be taken concurrently with Ed. 106, 141, and 143.)

143. **Mathematics in the Elementary School.** I, II, S. 2 hr. PR: Six hours of mathematics, Ed. 100 and 105, and enrollment in the elementary undergraduate program. Materials and methods with emphasis on the use of problem situations and "discovery" procedures for the development of mathematical ideas appropriate for the elementary school. (To be taken concurrently with Ed. 106, 141, and 142.)

144. **Social Studies in the Elementary School.** I, II, S. 2 hr. PR: Ed. 100, 105, 106, 141, 142, 143, and enrollment in the elementary undergraduate program. Study of modern practices in the teaching of social studies. Emphasis on the principles and techniques underlying the community-oriented social processes, foreign culture and geography, and history are developed. (To be taken concurrently with Ed. 145 and 146.)

145. **Science in the Elementary School.** I, II, S. 2 hr. PR: Ed. 100, 105, 106, 141, 142, 143, and enrollment in the elementary undergraduate program. Study of modern practices in the teaching of science. (To be taken concurrently with Ed. 144 and 146.)

146. **Student Teaching in the Elementary School.** I, II. 6 hr. PR: Ed. 100, 105, 106, 141, 142, 143 and enrollment in the elementary education undergraduate program; a minimum grade-point average of 2.25 overall; a minimum grade-point average of 2.0, (1) in the subject-specialization, three-fourths of which must be completed,* and (2) in Education courses; and senior standing. An applicant for student teaching must submit positive evidence that he or she meets the requirements of physical condition and emotional stability necessary for the performance of the duties of a teacher. Ed. 144 and 145 must be taken concurrently with student teaching. Admission is by application made prior to mid-semester of the preceding semester to the chairman of Elementary Education.

150-170. **Materials and Methods of High-School Teaching.** I, II, S. 2 hr. PR: Consent. Special methods in the various secondary-school teaching fields. For West Virginia certification these courses are an integral part of Ed. 124. May also be chosen as a 2-hour elective by students who are registered for student teaching in other fields.

The various sections of this course follow:

150. **Science.** 2 hr.
152. **Physical Education.** 2 hr.
153. **Foreign Languages.** 2 hr.
155. **Library Science.** 2 hr.
160. **Vocational Agriculture.** 3 hr.
161. **English and Speech.** 2 hr.
163. **Home Economics.** 2 hr.
164. **Industrial Arts.** 2 hr.
165. **Mathematics.** 2 hr.
167. **Social Studies.** 2 hr.
168. **Art.** 2 hr.
169. **Music.** 2 hr.
170. **Commerce.** 2 hr.

*See footnote on page 355.

173. **Technical Drawing 1 (IA).** I. 2 hr. Fundamentals of mechanical drawing with emphasis on establishment of good techniques, nomenclature, conventions, and correct applications.

174. **Technical Drawing 2 (IA).** II. 2 hr. PR: Ed. 173 (IA). Continuation of Ed. 173 (IA). Detail and assembly drawing, sketching, tracings, and methods of duplication.

180. **Industrial Arts Graphics (IA).** I. 2 hr. Familiarization with methods of graphic reproduction including linoleum block, letterpress, silk screen, binding and offset press.

181. **Materials and Methods of Industry.** I. 2 hr. Introduction of related information in secondary school industrial arts laboratories relative to mass production, automation, and modern technology. Experiments with industrial products.

194. **Organization of Industrial Arts.** II. 2 hr. Comparative analysis of the objectives of general and industrial arts education; industrial arts content; study of the problems involved in organizing and administering industrial arts courses in unit and general shops.

202. **Early Childhood Education.** S. 2 hr. PR: Consent. Application of principles of psychology to early childhood education.

204. **Advanced Woodworking, Construction, and Finishing (IA).** II, S. 3 hr. PR: Ed. 102 (IA), 103 (IA), or equiv. Selection of advanced projects, analysis of construction, planning, and finishing, application of machine tools.

221. **Audio-Visual Resources for Instruction.** I, II, S. 3 hr. PR: Ed. 105, 106. Survey of the many types of materials available for teaching. Multisensory techniques, sources of materials, and practical classroom utilization are considered. One hour laboratory period per week is arranged.

223. **Student Teaching Clinical Experience in Elementary or Secondary Education.** I, II, S. 2–4 hr. PR: Consent. Advanced course in student teaching, stressing clinical procedures in classroom learning problems.

238. **Design in Industrial Education (IA).** I, S. 3 hr. PR: Consent. Industrial education design; architectural drawing and model building. Emphasis on application of design components at the secondary school level.

240-250. These courses are designed to prepare versatile teachers of industrial arts and to meet State certification requirements. The abbreviated introduction to specific crafts through these courses is intended to provide broad rather than specialized experience and to prepare the teacher to teach the fundamentals of crafts rather than to attain vocational competence. Prospective teachers should elect, from these courses, those which will supplement their previous training in organizing and directing the industrial arts program.

240. **Art Metal and Jewelry (IA).** I, S. 3 hr. PR: Ed. 104 (IA) or equiv. Creative design and construction of art metal and jewelry involving the utilization of sheet, bar, and wire stock. Development of units suitable for the secondary school level is stressed.

242. **Upholstery and Finishing (IA).** I, S. 3 hr. PR: Ed. 102 (IA), 103 (IA) or equiv., and consent. Design and construction of upholstery units, reupholstery, finishing and refinishing. Construction of teaching units in these areas.

243. **Advanced Ceramics (IA).** II. 3 hr. PR: Ed. 121 (IA) or consent. Design in ceramics, construction of projects involving mold work potter's wheel, and hand form methods. Experimentation with glazes including glaze composition. Development of suitable teaching aids involving ceramics.

244. **Advanced Industrial Arts Crafts (IA).** II, S. 3 hr. PR: Ed. 121 (IA). Experiments with crafts media in depth in the areas of plastics and leather. Development of suitable teaching units involving crafts materials.

246. **Advanced Industrial Arts Graphics (IA).** II, S. 3 hr. PR: Ed. 180 (IA) or equiv. Concentration in depth in one or more of the graphic arts media. Emphasis on offset methods of reproduction.

248. **Advanced Electricity (IA).** II, S. 2 hr. PR: Ed. 131 (IA) or equiv. Study of the technical phases of electricity with emphasis on planning shop courses, shop equipment and layout, and development of industrial aids.

249. **Sheet Metal Pattern Development (IA).** II, S. 3 hr. Layout problems involving parallel, radial, and triangulation methods. Construction of instructional units utilizing these principles.

250. **Industrial Arts in Special Education (IA).** II, S. 3 hr. Experimentation with industrial arts crafts suitable for instruction in special education classes. Discussion of factors involved in selection and manipulation of such media as leather, plastics, ceramics, wood, and metal.

251. **Production of Audio-Visual Materials.** I, II, S. 2 hr. PR: Ed. 221. Techniques of making audio-visual materials for use in teaching and school public relations programs are demonstrated. Individual projects of planning and producing materials are carried out by the student.

259. **The Music Education Program.** S. 3 hr. PR or parallel: Ed. 124 or consent. Organization and administration of the complete Music Education program for grades 1-12.

262. **Vocational Home Economics in Secondary Schools.** II. 3 hr. PR or parallel: Ed. 120, 124, 163; 25 hr. in Home Economics. Primarily for seniors and teachers of home economics.

270. **Special Problems and Workshops.** I, II, S. 2-4 hr. PR: 14 hr. in Education. To take care of credits for special workshops and short intensive unit courses on methods, supervision, and other special topics. Maximum of 8 semester hours may be applied toward the Master's degree, of which no more than 6 semester hours will be in Extension.

271. **Educational Measurement.** I, II, S. 3 hr. PR: Consent. Background for educational measurement, the nature of evaluation, measuring and predicting pupil progress. Statistics include measures of central tendency, percentiles, variability, and simple correlation. First course in statistics and research.

272. **Internship in Industrial Arts Therapy (IA).** I, II, S. 8 hr. Internship in a clinical setting providing individualized instruction in the teaching techniques of industrial arts and therapeutic practices in rehabilitation of the handicapped.

274. **Workshop: Economic Education.** S. 3 hr. Workshop for principals, teachers, and supervisors with emphasis on the economic structure of our society and methods of integrating economics into the school program. Sponsored jointly by the College of Human Resources and Education and the College of Commerce.

275. **Curriculum Principles and Patterns in General Education.** II. 2 hr. PR: 6 hr. in undergraduate Education and senior rank. Major emphasis on principles, philosophy, and concepts of general education in secondary schools; means and ends in general education: core, subject matter, integrated studies, broad fields, activity.

276. **Teaching Young, Adult Farmer, and Off-Farm Agricultural Occupations Classes.** I, S. 2 hr. PR: Ed. 105, 106, or consent. Participation in conducting young, adult farmers, and off-farm agricultural occupations classes and school-community food preservation center; organization, course of study, method teaching and supervision of the classes, young farmers' associations, adult farmers' organizations in classes.

277. **Organizing and Directing Supervised Farming Occupational Experience Programs.** I, S. 2 hr. PR: Ed. 160 or consent. Planning programs of supervised farming and supervised occupational experience, supervising and evaluating such programs for day students, young, adult farmer, and off-farm agricultural occupations classes and groups.

284. **Pupil-Personnel Administration.** I, II, S. 2 hr. PR: Ed. 100, 105, 106. Pupil accounting, guidance, extracurricular activities, and control. Open only to senior students and graduates.

285. **The Junior High School.** I, II. 2 hr. PR: Ed. 100, 105, 106, and consent. Development, philosophy, program, and practices of the junior high school.

Secretarial Studies

51. **Business Communications.** II. 3 hr. PR: 6 hr. English composition and ability to type.

61. **Typewriting.** I. 2 hr. For students in the Division of Education with a Commerce teaching field, or consent.

62. **Typewriting.** I, II. 2 hr. PR: Sec. Studies 61 or equiv. For students in the Division of Education with a Commerce teaching field, or consent.

125. **Shorthand.** I. 4 hr. For students in the Division of Education with a Commerce teaching field, or consent.

126. **Shorthand.** II. 4 hr. PR: Sec. Studies 125 or equiv. For students in the Division of Education with a Commerce teaching field, or consent.

131. **Secretarial Training and Office Practice.** I. 3 hr. PR: Ability to type. For students in the Division of Education with a Commerce teaching field, or consent.

132. **Transcription.** II. 2 hr. For students in the Division of Education with a Commerce teaching field, or consent.

The Division of Family Resources

(formerly HOME ECONOMICS)

PURPOSE

The curriculum in the Division of Family Resources is designed to provide a professional education for persons expecting to work directly or indirectly with families in improving the quality of their living. The purpose of home economics is to assist individuals and families in developing satisfying relationships within the family and between the family and other social institutions. It contributes to the creation of a physical environment conducive to the development of human resources. Home economists work through existing economic and social organizations to encourage the improvement of goods and services used by consumers and to provide leadership in teaching people to develop competence in meeting their changing needs.

CAREERS

Home economists find professional opportunities in education, business and public service. They may work directly with families; specific age groups such as children, youth or aged; or individual consumers; and directly through educational programs in various communication media (radio, television, journalism). Home economists are employed as teachers, nursery school supervisors, extension workers, 4-H Club agents, YWCA workers, dietitians, home service representatives, social

welfare workers, radio and television programmers, interior designers, fashion coordinators, and buyers. Increasingly their competencies are being sought by international agencies for services in cultural and educational exchange programs such as the Peace Corps.

FACILITIES

The Division of Family Resources is located in Oglebay Hall. Its specialized facilities include teaching laboratories for housing and design, clothing and textiles, food and nutrition, child development; a student lounge, and reading room.

REQUIREMENTS FOR THE DEGREE

Students have the choice of four options toward a degree in home economics: social science emphasis, physical science emphasis, art emphasis, or general. The degree granted is a Bachelor of Science. Students may also pursue a Bachelor of Arts degree with a major in home economics by fulfilling the requirements as set forth in the College of Arts and Sciences section of this bulletin.

Minimum hours in Home Economics	36
Total hours in other areas	80
Electives	12
GRAND TOTAL	128

REQUIRED COURSES

	Hr.
I. University Core	
English Composition	6
Physical Education	4
Core Group A Art, Music, Foreign Language, Literature, English Literature, Philosophy, Humanities	12
Core Group B Economics, Geography, History, Psychology, Political Science, Sociology, Social Science	12
Core Group C Biology, Chemistry, Geology, Mathematics, Physics, Physical Science	12
TOTAL	46
II. Home Economics Professional Core	
1. Child Development and Family Relations 114	3
2. Clothing and Textiles 2 or 102	3
3. Food and Nutrition 1 or 135	3
4. Home Management & Family Economics 210 or 230	3
5. Housing and Design 3	3
TOTAL	15
III. Options	
a. Social Science Emphasis	
1. Additional courses in social science areas	12
2. Additional courses in child development and family relations, home management and family economics areas	14
3. Electives	41
TOTAL	67

b. Physical Science Emphasis

1. Additional courses in physical sciences, work in at least two fields	12
a. Biology, bacteriology, zoology, genetics	
b. Chemistry	
c. Mathematics, statistics, physics	
2. Additional courses in foods and nutrition	15
3. Speech	3
4. Electives	37
TOTAL	67

c. Art Emphasis

1. Additional courses in at least two of the following areas:	21
a. Accounting, marketing, journalism	
b. Art	
c. Psychology, sociology, history	
2. Additional courses in textiles and clothing, housing and design areas	15
3. Speech	3
4. Electives	28
TOTAL	67

d. General—Those wishing a vocational home economics teaching certificate must have at least 8 hours in each area of home economics in addition to the general and professional education requirements. (See Division of Education section for details.)

1. One additional 3 hours course in each area plus 6 hours of electives in home economics	21
2. Electives	46
TOTAL	67

Laboratory Fees

A non-refundable fee is required of all students who take the following laboratory courses in Home Economics:

Course	*Per Semester*	*Course*	*Per Semester*
Food and Nutrition 15	$ 5.00	Food and Nutrition 205	$5.00
Food and Nutrition 115	10.00	Home Mgmt. and Fam. Econ. 120	5.00
		Home Mgmt. and Fam. Econ. 230	5.00

COURSES OF INSTRUCTION

FOOD AND NUTRITION

FN

1. **Elementary Nutrition.** I, II. 3 hr. Essentials of adequate diet; applications are made with particular reference to needs of college students.

15. **Food Selection and Preparation.** I, II. 3 hr. PR: 8 hr. of a laboratory science. (2 lec., 1 lab.). Basic principles of food selection, care and preparation. Emphasis is placed on the chemical and physical properties of foods and reactions which occur during processing.

108. **Quantity Cookery.** II. 3 hr. PR: FN 115. (1 lec., two 3-hr. labs. arranged.). Application of principles to preparation of food in large quantities. Use of standardized formulae, calculation of costs, and use of institution equipment. Field trip included. Offered alternate odd years.

115. **Meal Planning, Preparation, and Service.** I, II. 3 hr. PR: FN 15 or consent. (1 lec., 3-hr. lab.). Selection and purchase of foods; planning, preparing and serving meals with emphasis on time, energy, and money management.

128. **Institutional Buying.** I. 2 hr. PR: FN 108. Producing areas, distribution of food products, specifications, storage and food practices in quantity buying. Observation in local wholesale markets, warehouses, and storage units. Offered in alternate odd years. Tour of market facilities in Pittsburgh area required.

135. **Food and People.** I. 3 hr. The cultural, social, ethnic, and economic problems involved in feeding families.

138. **Institution Organization and Management.** II. 3 hr. PR: FN 108. Principles of organization and management of food service. Field trip included. Offered alternate even years.

148. **Laboratory Practice in Institution Management.** I, II. 2 hr. PR: FN 138 and consent. Experience under supervision in planning, preparing and serving food in an institution. Selection of place and type of experience to be determined by needs of students.

201. **Diet Therapy.** II. 3 hr. PR: FN 101, Zool. 271. Adaptations of normal diet for diseases whose prevention or treatment is largely influenced by diet. Offered in alternate odd years.

205. **Experimental Cookery.** II. 3 hr. PR: FN 15, Chem. 131, or consent. (1 hr. lec., 2 2-hr. labs.). Utensils, ingredients, temperature, manipulation, and cooking methods as they affect quality of cooked products. Offered in alternate odd years.

211. **Readings in Nutrition.** II. S. 1-4 hr. PR: FN 241 or consent. Review of current literature and of present research. Topics depend upon needs and interest of class members.

221. **Family and Community Nutrition.** II. 3 hr. PR: Consent. Special emphasis is given to nutritional status of the individual and family in the community. Students study nutritional problems and work toward their solutions through fieldwork.

241. **Nutrition.** I. 3 hr. PR: One course in nutrition, biochemistry, and physiology. The role of food nutrients in the physiological and biochemical processes of the body; nutritional needs of healthy individuals under ordinary conditions and in periods of physiologic stress. Offered alternate even years.

281. **Problems in Nutrition and/or Diet Therapy.** 1-4 hr. PR: Written consent of instructor.

285. **Problems in Foods.** 1-4 hr. PR: Written consent of instructor.

288. **Problems in Institution Management.** 1-4 hr. PR: Written consent of instructor.

TEXTILES AND CLOTHING

TC

2. **Principles of Clothing Construction.** I, II. 3 hr. (Three 2-hr. periods per week). Basic principles of clothing construction including pattern alteration and fitting.

17. **Textiles.** I, II. 3 hr. (2 lec., 1 lab.). Textile fibers and fabrics studied with view to their use in dress and in the home. Characteristics of the major fibers and their suitability to various uses. Study of standard and novelty materials with emphasis on appropriate use and care.

102. **Clothing for the Family.** I. 3 hr. (3 lec.). Clothing for the family in relation to the social, psychological, and economic factors including a study of the clothing industry, trends, and cultural significance. Field trip included.

212. **Advanced Clothing Construction.** I. 2 hr. PR: TC 232 or consent. Offers opportunity for creative expression and for understanding of pattern design through handling of fabrics on dress form. Costumes are designed, draped and constructed.

217. **Textiles for Consumers.** I. 3 hr. PR: TC 17. Acquaints students with the regulations, marketing channels, information sources, and new developments relevant to the selection of fabrics for household uses and wearing apparel. Discussion of current literature as it relates to buying fabrics for use in clothing and home furnishing.

222. **Tailoring.** I, II. 3 hr. PR: TC 2, 17. Tailoring of suits and coats. Emphasis placed on professional techniques, advanced fitting and construction of garments. Second garment constructed by fast method techniques.

232. **Costume Design.** II. 2 hr. PR: TC 2, 17. Techniques of figure and fashion drawing. Designing for individuals of various types and ages. Some history of costume included.

282. **Problems in Clothing.** 1-4 hr. PR: Written consent of instructor.

287. **Problems in Textiles.** 1-4 hr. PR: Written consent of instructor.

HOUSING AND DESIGN

HD

3. **Introduction to Related Art.** I, II. 3 hr. The use of the design elements and the application of the design principles to stimulate imagination and creative ability and to develop discriminating judgment in selection and arrangement of materials used for the individual and the home.

23. **Housing Design.** I, II. 3 hr. PR: HD 3 or consent. Housing and home planning as they relate to family living. Selection, arrangement, and use of the interior and exterior space for activities carried on, in, and around the home.

123. **Interior Design.** I. 3 hr. PR: HD 23 or consent. (2 lec., 1 lab.). The practical and aesthetic aspects of coordinating the furnishings, background, accessories, lighting, and space of a house for family living.

223. **Advanced Interior Design.** II. 3 hr. PR: HD 23, 123 or consent. A study of the technical and design information necessary to comprehend and function within the contemporary home furnishings market.

283. **Problems in Housing and/or Design.** 1-4 hr. PR: Written consent of instructor.

CHILD DEVELOPMENT AND FAMILY RELATIONS

CDFR

106. **Child Development.** I, II. 3 hr. PR: Psych. 1 or 3, or Ed. 105 or consent. (2 lec. and 1 2-hr. lab. arr.). Principles of development during childhood including physical, psychological, and social factors affecting behavior. Observation and participation in the University Nursery School.

114. **Family Relations.** I, II. 3 hr. An introductory course in the study of marriage and the family. Attention is placed particularly on mate selection, the interplay of social roles in family relations, and problems of decision-making and adjustment arising out of the demands of the contemporary social setting.

126. **Infant Development.** I. 2 hr. (1 lec., 1 lab.). Development characteristics and problems during the prenatal period and the first eighteen months with implications for guidance and care.

224. **Family and the Individual in the Community.** I. 3 hr. PR: One course in the family, or sociology, or consent. Social psychological analysis of the individual in the family and in other social systems. Involves the study of role relationships, community processes and attitudes and values as they affect the behavior of the individual.

264. **Family Development.** I, II. 3 hr. PR: CDFR 114 or consent. A professional course designed to prepare students for work with families in their varying

stages of development and different socio-economic levels. A comparative study of families using cross-cultural resources; involves intensive study of family relationships as affected by differing stages of the family life cycle, from beginning family through the aging couple. Lecture, discussion, and case studies of families.

266. **Needs of Adolescents.** I, II. 3 hr. A study of adolescent needs as met by the home with contributions of other agencies such as church, school and youth groups. Physical, social, and integrative needs will be considered from the standpoint of needs of all family members as well as the individual.

276. **Seminar in Child Development.** II. 2 hr. PR: Senior standing and consent. A review and discussion of recent literature pertaining to child development. Offered in alternate years.

284. **Problems in Family Relations.** 1-4 hr. PR: Written consent of instructor.

286. **Problems in Child Development.** 1-4 hr. PR: Written consent of instructor.

HOME MANAGEMENT AND FAMILY ECONOMICS

HMFE

120. **Communication of Consumer Information.** I or II. 2 hr. PR: Min. of 3 hr. in each of four areas of home economics, or consent. Techniques of communicating ideas and information relative to goods and services available to the consumer. Emphasis upon demonstration techniques.

210. **Family Economics.** I, II. 3 hr. PR: Senior or graduate standing. Management of the family's money resources. Consideration of the economic problems of families, of planned spending and saving, and of the role of the consumer.

220. **Consumer Economics.** II. 3 hr. PR: Econ. 51, HMFE 210 (214), or consent. Course designed to help students understand the role of consumer in our economy. Involves the study of research methods and techniques being used to identify, understand, and solve consumer problems.

230. **Home Management, Principles and Application.** I, II. 3 hr. PR: Upper-division standing. Study and application of management in a variety of situations faced by the family with opportunity to integrate knowledge from other courses.

250. **Household Equipment.** I, II. 2 hr. Selection, arrangement, use and care of equipment for various situations and for different income levels. Lecture, laboratory, and discussion.

280. **Problems in Home Management and/or Family Economics.** 1-4 hr. PR: Written consent of instructor.

HOME ECONOMICS EDUCATION

Ed. 262. **Vocational Home Economics in Secondary Schools.** II. 3 hr. To be taken prior to or parallel with Ed. 124.

HEEd.

209. **Evaluation in Home Economics.** II. 3 hr. PR: 30 hr. of home economics, 7 hr. of education. Experience in selecting, devising, and using evaluation devices for appraising student progress toward desired goals in home economics. Offered alternate odd years.

219. **Adult Education in Homemaking.** I. 3 hr. PR: 30 hr. of home economics, 7 hr. of education. Current trends and present activities. Organization of adult classes; development of unit outlines; consideration of teaching methods; illustrative material and bibliography. Offered alternate even years.

279. **Seminar in Home Economics Education.** I, II, S. 3 hr. PR: Senior standing and 6 hours of education. A review and discussion of recent literature per-

taining to home economics at the junior and senior high school levels and the college and adult levels based on the history of the home economics movement from the Lake Placid Conference in 1909 to the present time.

HONORS PROGRAM

100. **Home Economics Honors Program.** 3 hr. PR: Second-semester junior standing; at least 2 academic years in residence at West Virginia University; overall grade-point average 3.0 or better; grade-point average in home economics courses 3.20 or better. Individual special problems for undergraduates of second-semester junior standing who show special ability and interest in one of the following fields: child development, home economics education, or nutrition. Admission dependent only upon the recommendation of the adviser and the Honors Course Committee. Hours arranged.

110. **Home Economics Honors Program.** 3 hr. PR: First-semester senior standing; overall grade-point average of 3.0 or better; grade-point average in home economics courses 3.25 or better, and Home Econ. 100. Individual special problems for undergraduates of first-semester senior standing who show special ability and interest in one of the following fields: child development, home economics education, or nutrition. Admission only upon the recommendation of the adviser and the Honors Course Committee. Hours arranged.

120. **Home Economics Honors Program.** 3 hr. PR: Second-semester senior standing; overall grade-point average of 3.0 or better; grade-point average in home economics courses 3.25 or better; Home Econ. 110. Individual special problems for undergraduates of second-semester senior standing who show special ability and interest in one of the following fields: child development, home economics education, or nutrition. Admission only upon the recommendation of the adviser and the Honors Course Committee. Hours arranged.

The Division of Social Work

The Division of Social Work provides an undergraduate curriculum designed to provide the student with a basic understanding of social welfare as a system of social institutions which has been developed to meet human needs.

Contemporary American social welfare programs are integrally related to our history and current social and political changes. Welfare programs are of such significance that every educated citizen should have some knowledge of their origins, philosophy and structure. This basic knowledge is offered in a group of 200-level courses which have the following specific objectives:

1. To assist the student to understand social welfare as a system of social institutions in a context of social change and changing values in a democratic society.
2. To assist the student in the development of a capacity for critical assessment of the meaning of important social welfare policies and programs for human well-being in the United States and elsewhere.
3. To assist the student in the integration of other knowledge, drawn from his academic studies and life experiences, into a personal point of view regarding the rights and responsibilities of the individual in American society.
4. To assist students to gain a general, non-specialized, understanding of the structure and functions of social work as a professional service.

The 200-level courses may be offered as a social work option in the sociology major; or as a minor in conjunction with any major offered toward the Bachelor of Arts degree.

COURSES OF INSTRUCTION

212. **Introduction to Social Welfare. I.** 3 hr. A general introduction to social welfare in the United States; history, philosophy, programs and problems; social welfare as a social institution; the American way in welfare. The emphasis is on what the citizen needs to know about welfare problems and solutions.

213. **The Field of Social Work.** II. 3 hr. PR: S.W. 212. A critical analysis of theory and practice in major areas of social work, including public assistance, the care of dependent children, mental health and services for the aged.

215. **The Profession of Social Work.** II. 3 hr. PR: S.W. 212. Social Work as a professional service; its place in society; its purpose, underlying values, knowledge, and methods.

COURSES FOR EMPLOYED WORKERS

The Division of Social Work offers a series of 200-level courses which are designed to meet the needs of men and women employed in health, education, and welfare agencies. Such courses are given both on campus and in extension.

230. **Public Welfare.** 3 hr. An introduction to the history, philosophy and structure of public welfare, including public assistance and programs for the aged, survivors and disability insurance; historical development, administrative structures, perspectives.

240. **Child Welfare.** 3 hr. The physical, social and psychological needs of children; services provided by public and private agencies to parents and to children who need protection, assistance, foster care, adoption, or services in their own homes; historical background.

250. **Introduction to Social Casework I.** 3 hr. The psychology of client and caseworker and the general character of casework help. Lecture, discussion and analysis of selected case materials.

251. **Introduction to Social Casework II.** 3 hr. PR: S.W. 250 or equiv. Further study in the general character of casework help. Case analyses, lectures, and class discussion of casework method.

260. **Introduction to Growth and Behavior I.** 3 hr. Study of man as a psychosocial, biological entity. Structure and dynamics of personality development. Models of personality.

261. **Introduction to Growth and Behavior II.** 3 hr. PR: S.W. 260 or equiv. Further study in the dynamics of personality growth and behavior. Special consideration of deviant development and behavior.

The School of Journalism

FACULTY

Quintus C. Wilson, Ph.D., *Dean of the School of Journalism and Professor of Journalism* (1961).
Gerald W. Ash, B.S.J., *Instructor in Journalism* (1966), 1965.
Paul A. Atkins, M.A., *Associate Professor of Journalism* (1961), 1953.
Francis L. Blake, M.S.J., *Assistant Professor of Journalism* (1966), 1962.
Donovan H. Bond, M.A., *Professor of Journalism* (1960), 1946.
James R. Redmond, M.S.J., *Lecturer in Journalism* (1964).
Perley I. Reed, Ph.D., *Director and Professor Emeritus of Journalism* (1958), 1920.
Guy H. Stewart, Ph.D., *Professor of Journalism* (1965), 1948.
William R. Summers, Jr., M.A., *Professor of Journalism* (1967), 1952.
C. Gregory Van Camp, M.S.J., *Assistant Professor of Journalism* (1966), 1960.
David A. Wiley, M.S.J., *Instructor in Journalism* (1966).
James R. Young, M.A., *Assistant Professor of Journalism* (1954).

General Information

On April 22, 1939, the Board of Governors separated the former Department of Journalism from the College of Arts and Sciences and reorganized it as a School of Journalism, with an administrative status similar to that of other schools and colleges of the University. At the time, West Virginia's was one of six journalism schools in the United States to achieve such an independent status.

The School of Journalism has a staff of seven full-time professors, one part-time lecturer, and two instructors. A University newspaper, forerunner of the present *Daily Athenaeum*, began publication November 9, 1887. The first journalism instruction at West Virginia University consisted of a two-hour course in news writing offered in 1915 in the Department of English of the College of Arts and Sciences. The same department by 1920 offered more journalism courses, and in 1927, a separate Department of Journalism, built around a full professional curriculum, was established. The Broadcast Curriculum was revised in 1966.

ACCREDITATION

The School of Journalism is accredited by the American Council on Education for Journalism for the Advertising and News-Editorial sequences. A.C.E.J. approval is held by only forty-nine colleges and universities in the United States.

The quality of the School's program also has been recognized by memberships in the American Association of Schools and Departments of Journalism and the American Society of Journalism School Administrators.

AIMS

The School of Journalism's objectives are:

1. To recruit men and women capable of serving the public interest through careers in journalism.
2. To help these young people achieve proficiency in the techniques employed in reporting, editing, and administering newspapers and other publications, and in the skills of advertising and radio-television journalism.
3. To make it possible for them to acquire, through a liberal arts background as well as their professional studies, that understanding of society's problems which is essential for effective leadership in any field.
4. To acquaint them with the responsibilities which must be assumed by communications specialists, and with the opportunities which are available.
5. To provide them with a knowledge of the role of journalism in society.
6. To carry on systematic research pertaining to problems in the field of communications.

7. To serve the citizens and communications media of West Virginia and the nation to the fullest extent that the abilities of students and staff members will permit.

LOCATION AND EQUIPMENT

The School of Journalism, after being housed in Woodburn Hall for more than thirty-two years, moved into Martin Hall in 1953, where it occupies most of the building.

With its basement and three stories, the School has numerous classrooms plus an auditorium seating approximately 160; laboratories for advertising layout, photography, public relations and industrial journalism, radio-television, and typography instruction; the *Daily Athenaeum* newsroom, a reading room and advertising office, the West Virginia Hall of Fame, and offices for the faculty.

The rooms devoted to instruction in newspaper editing and publishing are equipped like the editorial and business quarters of a large weekly or small-city daily newspaper. The newsroom contains a U-copy desk, work tables and desks, telephones, and some two dozen typewriters. There are teletypewriters on which United Press International and Associated Press dispatches are received. These reports are edited by journalism majors under the supervision of faculty members.

The adjacent reading room contains newspapers, magazines, and some reference works. It receives daily representative newspapers and magazines, of the nation as well as almost all West Virginia dailies and weeklies. It makes available for study about 40 dailies, many weeklies, a number of the standard magazines, and a collection of high school and college papers. The School subscribes to the important special periodicals of the profession.

For instruction in typography and advertising production, a laboratory has been equipped not only for providing demonstration material but also for giving the individual student practice in the setting and adaptation of type. The advertising-layout laboratory is supplied with special tables and desks for applied instruction. The facilities of the photography laboratory include the equipment essential to basic camera-print techniques.

The School's radio-television broadcast sequence is conducted in cooperation with the Department of Speech of the College of Arts and Sciences and with the Office of Radio, Television, and Motion Pictures. The latter is in the process of constructing a University educational television station, WWVU-TV (Channel 24).

The School offers comprehensive programs of instruction in industrial editing and public relations. To introduce students to the limitations and possibilities of type, the School also has one Linotype and a medium-sized automatic Heidelberg platen press and other printing equipment.

The journalism building also houses the offices of the West Virginia Press Association, which makes available certain publications, periodicals, information, and other materials from its files and records.

Additional opportunities for observation and practice, especially in the business and mechanical aspects of newspaper work, are provided at the plant of the West Virginia Newspaper Publishing Company in Morgantown, where the *Daily Athenaeum,* the student newspaper, is printed under contract.

PRACTICE OPPORTUNITIES

Opportunities for applying the principles of sound newspaper and radio-television practice are good. The *Daily Athenaeum,* a four-day campus newspaper, is produced by journalism students in laboratories conducted four days a week. Reporters cover the University community. Student desk personnel not only edit the local reporters' copy but also prepare for publication state, national and international wire copy received from the Associated Press and United Press International. Local pictures are taken and processed by the newspaper's staff photographers.

Advanced students interested in photo-journalism receive practical experience as photographers for the *Daily Athenaeum* and as stringers for the Associated Press. Independent projects in news-editorial, public relations, radio-TV, and advertising also are permitted.

Majors pursuing the Advertising sequence are required to spend no fewer than five hours a week during one semester soliciting advertising accounts for the campus daily, writing copy and otherwise servicing their accounts.

Some students get additional practice by working part-time for University information services and the Morgantown dailies or by taking vacation positions on newspapers in their home communities. Majors are especially urged to obtain vacation internships on a good weekly or daily newspaper during the summers that precede their junior or senior years.

Under a formal Statewide intern training program which became effective in 1959, students with at least a 2.0 average in all subjects and a 3.0 average in journalism courses, or who have special consent, may be employed by West Virginia newspapers for a 10-12 week period during the summer.

Training for students preparing for jobs in radio and television is conducted along workshop lines. In radio labs, students are responsible for gathering and writing the news for news programs and their work then is evaluated. Students' television training involves mastering the principles of motion picture photography, including "shooting" assignments and basic film editing.

In the future, training of advanced undergraduate and graduate students in radio and television courses, in part, will be connected with the production and programming for WWVU-TV, the University's newly authorized educational broadcasting station (Channel 24).

The School has received grants totaling $5,000 from *Reader's Digest*. The grants enable students to obtain experience in reporting news events from throughout West Virginia, particularly the State capital of Charleston, and on trips to other areas where news of campus interest takes place.

JOURNALISM ORGANIZATIONS

Journalism organizations which eligible students may join are: *Theta Sigma Phi*, professional organization for women in journalism and communications; *Sigma Delta Chi*, professional journalistic society; *Alpha Delta Sigma*, professional advertising honorary; *Kappa Tau Alpha*, national journalistic scholarship society, to which 10 per cent of journalism majors achieving highest scholastic attainment are elected each year; and *Pi Rho Sigma*, professional public relations society. Many other University organizations are also open to journalism students with special interests outside the field of journalism.

COURSES OPEN TO NON-JOURNALISM MAJORS

The School of Journalism offers to share its knowledge of the philosophy, history, principles, practices, and techniques of journalism and mass communications with all University students, regardless of major study, who desire to elect courses or to minor in the field.

Many journalism courses are open to non-journalism majors.

PLACEMENT OF GRADUATES

During the last four decades, graduates have encountered little difficulty in finding desirable positions. Although the School cannot guarantee positions to graduates, it assists them in learning of openings and making contact with employers. To this end it maintains a placement register for both current and past graduates. Students and alumni also are invited to make free use of the University Placement Service. Representatives of newspaper and magazine publishers and advertising media visit the campus every year to interview seniors.

TYPEWRITING

Before or soon after entering the University, a student planning to become a journalism major should learn the touch system of typing. From the beginning all students in writing courses are expected to submit copy in neat typewritten form.

PROFICIENCY IN ENGLISH

A student who proposes to major in journalism must achieve a 2.5 average or higher in English 1 and 2, *or* he must satisfactorily complete English 18.

Students who complete English 2 with less than a "C" grade are required either to retake English 2 and establish a "C" or better grade, or take the English proficiency examination.

All transfer students are required to take the English proficiency examination in their first semester of residence.

No student may proceed to the upper division (junior year) until he has either (1) received a grade of "C" or better in English 2 at West Virginia University, or (2) passed the University's English proficiency examination.

PROFESSIONAL RELATIONS AND SERVICES

Almost from the inception of journalism instruction at West Virginia University in the early 1920's, there has been a close and continuing relationship with the professionals among the mass media. The earliest associations were with the West Virginia Publishers Association and the West Virginia State Newspaper Council, and now the same relationship exists with the West Virginia Press Association, the successor to the two former groups. Moreover, close professional relationships have been expanded to include the West Virginia Broadcasters Association. An adjunct to the WVPA, the West Virginia Publications and Public Relations Section, also has developed a close tie-in.

All of these professional groups have been consulted through their leadership when curricula changes were anticipated in the School of Journalism, and as associations and as individual units they have contributed scholarships to worthy students in the School of Journalism.

The WVPA has been active in past years in obtaining better facilities for the School, and now the WVPA, WVBA, and P&PR groups are represented in an effort to obtain a new building for the School of Journalism.

In turn, the School of Journalism has been providing a number of new services to the professionals in the 1960's. A number of advertising seminars on a regional basis have been conducted for newspaper publishers and the retail merchants in their respective areas. A joint effort was made with the P&PR Section of the WVPA in a workshop in 1966, and they are to be continued on an annual or biennial basis. In addition, science writing symposia have been conducted on a biennial basis, and other educational seminars are planned for the future.

WVPA HALL OF FAME

In order to perpetuate the names, achievements, and ideals of the State's distinguished editors of the past, the West Virginia Journalism Hall of Fame was instituted in 1935. Elections take place every two years under the sponsorship of the West Virginia Press Association with assistance from the School of Journalism. Suitable memorials have been placed in the School of Journalism in a special room designed for the Hall of Fame and exhibits of historical significance.

THE WEST VIRGINIA FOURTH ESTATESMAN

The *West Vrginia Fourth Estatesman* is a periodical published quarterly by the School as a professional public service. Since it was founded in 1941, the *Fourth Estatesman* has disseminated journalistic news and digests of technical and special lectures delivered frequently to the student body of the School. It is sent free to the communications media of the State, to high school journalism teachers, and the School alumni.

COMMITTEE ON SCHOLARSHIP

Messrs. Atkins, Stewart, Summers, and Wilson.

SCHOOL OF JOURNALISM VISITING COMMITTEE

John A. Jones, Director of Public Relations, Weirton Steel Company, Weirton, *Chairman.*
Dorothy C. Bates, Special Promotions Director, Kaufmann's, Pittsburgh, Pa.
William P. Becker, General Manager, Radio Station WVOW, Logan.
Robert P. Mellace, Political Editor, *Charleston Daily Mail,* Charleston.
James A. Muscia, Publisher, *Logan Banner,* Logan.

Requirements for the Degree

THE BROAD EDUCATIONAL BACKGROUND

The School of Journalism emphasizes a strong liberal arts background for its students. Curricula are arranged so that students devote approximately 75 per cent of their study to broad liberal arts subjects and 25 per cent to professional courses in journalism.

This philosophy of journalism education is in accord with the best current thought in both educational and professional circles.

The School requires a minimum of 30 hours, and a maximum of 33, in journalism within the first 128 hours offered for the B.S.J. degree. Insistence is placed on a "content" field of study as a minor. In addition to learning certain techniques and gaining journalistic knowledge and insights, students in their journalism courses are enabled to synthesize and bring into sharp focus the knowledge gained in all their University studies. The content of at least half their courses in journalism lies well within the area of general knowledge leading to sound citizenship and enriched living, regardless of their future career roles. They develop skills of communication; gain an understanding of the nature of major local, state, national, and world problems and of the role of mass media in the democratic process; learn to evaluate intelligently both news and opinion as expressed through print and broadcast journalism, and in fact, become alert, informed consumers, as well as producers, of news.

Among the foundation courses that receive special attention are these: the English language and literature; foreign language; theoretical and applied economics and business administration; national, state, and local government and the governmental systems of foreign countries; American politics and international relations; the problems of management and labor and their social implications; American and European history; philosophy, psychology, and natural science.

BACHELOR OF SCIENCE IN JOURNALISM

A candidate who has satisfied all general requirements of the University and who also has met the requirements of the School of Journalism will be recommended for the degree of Bachelor of Science in Journalism or Bachelor of Science in Journalism Education, provided the combined number of his credits acquired as a pre-journalism student and as a regularly enrolled journalism major totals no fewer than 128.

As a minimum professional requirement, 30-33 semester hours must be obtained in journalism subjects. No fewer than 40 semester credits shall be obtained in courses numbered between 100 and 300.

MINIMUM AND MAXIMUM WORK

A full-time student admitted to the School of Journalism will normally be expected to carry at least 14 hours of course work in any regular semester, but under extenuating circumstances he may enroll for a full-time load of 12 hours, the University requirement. To be considered as a full-time student with 12 hours, one must have the permission of his adviser and the Dean. To carry more than 17 hours, a student must have an overall average of 3.0 or petition the Scholarship Committee. A student on probation will be restricted to a semester load of 12 hours; if he experiences scheduling difficulties, he may appeal to the Scholarship Committee to allow him to add one to two hours.

EXEMPTION FROM REQUIREMENTS

Exemption from any professional course because of professional journalistic experience that a student may have had will be granted only after the student has submitted satisfactory evidence as to the nature and quality of the experience. For such exemptions approved advanced courses shall be substituted. Credit toward a degree can be granted for practical work only by special examination.

PROFESSIONAL ADVISERS

A staff member serves as adviser in each curriculum with the Dean acting as general adviser for all journalism students. Not only juniors and seniors, but pre-journalism freshmen and sophomores as well, should consult their advisers about all scholastic and curricular problems that may arise.

SCHOLASTIC REQUIREMENTS

To be eligible for graduation, a student must earn as a minimum a cumulative average of 2.0 grade points with at least an overall 2.5 average for journalism work.

No student will be recommended for the degree unless he has shown to the satisfaction of the faculty that he possesses abilities and qualities which give promise that he can do adequate work in professional journalism.

CORE CURRICULUM REQUIREMENTS

All undergraduates must complete all requirements of the University's Core Curriculum. In addition to requiring students to erase high school deficiencies, the Core Curriculum requires that 12 credit hours be earned from approved courses in each of the three groups listed below, with work being taken in at least two subjects from each group. Concurrent requirements of the School of Journalism, as listed, fulfill all Core requirements, regardless of specialization within the School.

The student should plan to fulfill most Core requirements within his freshman and sophomore years, and fulfill all requirements before his senior year.

Students in Journalism Education must consult with their adviser on Core courses that meet certification requirements.

Group A (Art, music, foreign languages and literature, literature of the English language, philosophy).

Required by School of Journalism:

English 4 and 6 ..... 6 hr.

Humanities 1 and 2 ..... 6 hr.

Required for students pursuing Specialization in Agriculture or Sciences, and Advertising students not taking a foreign language.

Group B (Economics, history, psychology, political science, sociology).

Required by School of Journalism:

History 1 and 2 ..... 6 hr.

Students in all areas of journalism, except Specialization in Agriculture or Science, and Advertising, may select either History 1 and 2 or Humanities 1 and 2.

History 52 and 53 ..... 6 hr.

Students in Journalism Education are not required to take these courses because of State Certification requirements.

Economics 51 and 52 ..... 6 hr.

Economics 52 not required in Journalism Education.

Psychology 1 ..... 3 hr.

Not required in Agriculture or Sciences specializations or Journalism Education.

News-Editorial and Radio-Television students may substitute Philosophy 10 for this requirement.

Political Science 2 — 3 hr.
Political Science 120 is required in Public Relations curriculum instead of Political Science 2. Political Science 120 is required in the Broadcasting curriculum *in addition* to Political Science 2.

Group C (Biology, chemistry, geology, mathematics, physics).
Required by the School of Journalism:
Natural Science (biology, chemistry, geology or physical science) — 8 hr.
Elective from Group C courses — 4 hr.
Mathematics 3 and 4 (6 hr.) required for students pursuing Specialization in Agriculture or Sciences.

PRE-JOURNALISM STUDIES

Candidates for the degree of Bachelor of Science in Journalism are registered in the College of Arts and Sciences until they have earned at least 58 semester hours of college credit. Studies during the freshman and sophomore years are designed so that the student may fulfill nearly all University Core Curriculum requirements, while at the same time exposing himself to the varied areas of study so that he may intelligently select a minor field and a journalism specialization upon entering his junior year.

FIRST YEAR	*Hr.*	SECOND YEAR	*Hr.*
Journalism 1	2	Journalism 18	3
Journalism 2*	1	Journalism 19	3
English 1 and 2	6	Mil. Sci. or A.S. 3 and 4	4
Mil. Sci. or A.S. 1 and 2	4	Physical Education (Women only)	2
Physical Education	2	Core requirements	
Core requirements			

*Not required of students pursuing Specialization in Agriculture or Science; Broadcasting majors will substitute Journalism 80.

THE MINOR FIELD

To meet the requirements for a minor, a student must earn at least 15 semester credits in some subject other than journalism, 12 of which must be in courses numbered 100-199 or 200-299. Courses 100 level or higher, even when they can be taken consecutively, will be counted only one time for hours as a minor. For students pursuing two minors simultaneously, the requirement in each area is at least 12 semester credits, of which 9 must be in upper-division courses (those numbered above "100"). The first minor must be in a "content" area of study.

Minor fields especially recommended for all journalism students are economics, history, English, political science, and sociology. In addition, commerce is recommended for advertising and public relations majors. Agriculture, the natural sciences, life sciences, commerce, or engineering are recommended for Agriculture and Science Specialization majors.

Students in other areas of study who desire to minor or take extensive electives in journalism are welcome and will be given special counseling to obtain the information and skills which they desire. Such students should consult with both their own advisers and the Dean of the School of Journalism regarding the journalism courses in which they are to enroll.

Journalism Studies

The School of Journalism offers five principal and three variable curricula designed to equip students for the numerous branches of journalistic practice and teaching—areas where journalistic training is both desirable and necessary preparation.

ADVERTISING

Since this field is growing and greatly diversified, Advertising students need both a general, overall knowledge and the opportunity to direct their studies toward the specialized area in which they intend to seek employment.

The advertising student, therefore, may direct his studies during his senior year toward (1) advertising media, (2) print advertising, or (3) radio and television advertising.

THIRD YEAR	Hr.	FOURTH YEAR	Hr.
Commerce	6	Commerce	6
Journalism 110	2	Journalism 108	2
Journalism 113	3	Journalism 114	2
Journalism 115	2	Journalism 201	1
Core requirements		Journalism 239	2
Electives as needed		Specialization*	3
		Electives as needed	

*During the senior year, the advertising student will select two of the following courses for his specialization: Journ. 204 (Markets and Media), Journ. 210 (Advertising Production), Journ. 286 (Radio-Television Advertising), or Journ. 203 (Media Management and Promotion).

Advertising majors will elect from 5-8 addditional hours in journalism from the following courses: Journ. 118, 119, 120, 170, 189, 212, 213, 227, and 230.

NEWS-EDITORIAL

This sequence is intended primarily for those who wish to prepare themselves for writing or editing positions with newspapers or periodicals. A special adaptation of this curriculum is made for those who wish to develop their writing talents and background in agriculture, the sciences, or physical education.

THIRD YEAR	Hr.	FOURTH YEAR	Hr.
Political Science 120	3	Journalism 128***	2
Journalism 118	3	Journalism 227***	3
Journalism 119**	3	Journalism 230***	3
Journalism 120**	2	Journalism 228***	3
Journalism 201	1	Electives as needed	
Core requirements			
Electives as needed			

**Not required of students pursuing Specialization in Agriculture or Science. News-Editorial majors are urged to take photography in the first two years.

***Not required of students pursuing Specialization in Agriculture, Science, or Physical Education.

News-Editorial majors will elect from 3-6 additional hours in journalism from the following courses: Journ. 80, 108, 110, 113, 170, 182, 183, 212, and 220.

Specialization in Agriculture, Sciences

With this curriculum specialization, a student may obtain proficiency in agriculture reporting, scientific writing, and journalism while acquiring extensive knowledge in specialized areas, such as agriculture, home economics, the medical sciences, the natural and physical sciences, mathematics, or commerce.

REQUIREMENTS, AGRICULTURE

Students will follow the News-Editorial sequence as amended by footnotes, and will take the following additional courses: Journ. 110 and 213, Speech 11, Agr. 11, 12, 51, 52, Statistics 101, and 12 additional hours of agriculture electives.

Ten hours of journalism electives will be chosen from the following courses: Journ. 80, 108, 113, 119, 120, 182, 183, 212, and 230.

Summary:

Total hours required in non-journalism subjects	78- 83
Total hours for Journalism Major	30
Total hours for Agriculture Specialization	25
	133-138

REQUIREMENTS, SCIENCES

Students will follow the News-Editorial sequence as amended by footnotes, and will take the following additional courses: Journ. 110 and 113, Speech 11, plus 23-26 hours of electives in specialization as determined through consultation with the journalism adviser.

Ten hours of journalism electives will be chosen from the following courses: Journ. 80, 119, 120, 128, 182, 183, 212, 213, and 230.

Summary:

Total hours required in non-journalism subjects	79- 85
Total hours for Journalism Major	30
Total hours for Science Specialization	23- 26
	132-141

Specialization in Physical Education

This program is designed to provide special studies in physical and health education for journalism majors who desire fundamental and extensive knowledge that will enable them to serve in the fields of sports reporting, editing, and broadcasting, or as advertising writers, salesmen, and managers.

REQUIREMENTS, PHYSICAL EDUCATION

Students will follow the News-Editorial sequence as amended by footnotes, and will take the following additional courses: Phys. Educ. 51, 55, 56, 71, 121, 278, eight hours additional physical education electives, Pol. Sci. 120, Speech 120, Zool. 271, and Journ. 113.

PUBLIC RELATIONS

Designed for students who wish to prepare for work in a public relations firm or public relations department, the curriculum also prepares students for such positions as information specialist in business, industry, organized labor, government, education, welfare agencies, or the armed services.

THIRD YEAR	Hr.	FOURTH YEAR	Hr.
Journalism 110	2	Journalism 120	2
Journalism 113	3	Journalism 201	1
Journalism 118	3	Journalism 212	3
Political Science 120	3	Journalism 213	2
Speech 11	3	Journalism 230	3
Core requirements		Electives as needed	
Electives as needed			

Public Relations majors will elect from 3-6 additional hours in journalism from the following courses: Journ. 80, 119, 182, 183, 189, 220, 227, and 228.

BROADCASTING

Students who want to work in the news and information areas in broadcasting should follow this curriculum and should pursue a double minor. One of these minors must be speech; political science is recommended for the second minor. There will be limited opportunities for upper division students to get some practical training on WWVU-TV, the University's educational television station.

THIRD YEAR	Hr.
Journalism 182	3
Journalism 183	3
Journalism 189	3
Economics 51, 52	6
Journalism 201	1
Political Science 120	3
Group A (core)	3
Electives, first minor	6
Electives, second minor	3
Journalism electives	5

FOURTH YEAR	Hr.
Journalism 281	3
Journalism 282	3
Journalism Electives	3
Electives, first minor	3
Electives, second minor	6
Electives	12

Journalism Electives: 113, 120, 128, 212, 227, 228, 243, 286.

HIGH SCHOOL JOURNALISM TEACHER CURRICULUM

A program for prospective high school journalism teachers, this curriculum enables students to obtain the degree of Bachelor of Science in Journalism Education and also qualify for a first-class professional certificate in West Virginia with teaching fields in Journalism and English, (or other fields of student's choice), Grades 7-12, by taking the following courses in addition to a modified pre-journalism studies program:

THIRD YEAR	Hr.
Journalism 118	3
Journalism 120	2
Education 100	1
Education 105	3
Education 106	3
Education 109 or Approved elective	2
English 111	3
English 142	3
Health Education 102	2
Core Requirements	
Approved English electives	6
Approved Journalism electives	4-5

FOURTH YEAR	Hr.
Journalism 215	2
Journalism 227	3
Journalism 230	3
Education 124	6
Education 120	4
Education 150-170	2
Approved Journalism electives	4-5
Approved English electives	6-9

PROGRAM FOR PROSPECTIVE JOURNALISM TEACHERS IN COLLEGES AND UNIVERSITIES

The student should obtain the Bachelor of Science in Journalism degree, then acquire a master's degree in the field, either before or after obtaining some practical experience with the media. The doctorate is essential to fullest advancement.

Courses of Instruction

The following system of course numbering is employed: Courses 1-99, intended primarily for freshmen and sophomores; courses 100-199, intended primarily for juniors and seniors; 200-299, advanced courses open to juniors, seniors, and graduate students.

1. **Introduction to Mass Communications.** I, II, S. 2 hr. Recommended for all University students; required of journalism majors. Role of the mass communicator in developing the political, social, and economic fabrics of a democratic society. Organization and function of newspapers, magazines, broadcast stations, and other principal media of mass communications, including the role of advertising.

2. **Lectures in Journalism.** II. 1 hr. Open to all University students; required of journalism majors. A series of one-hour weekly addresses by specialists representing the principal mass communications industries and professions.

18. **News Writing.** I, II, S. 3 hr. In order to be admitted to the School of Journalism a student must meet the school's English Proficiency requirement as specified elsewhere in this section of the Catalog. Open to all University students; required of all journalism majors. Two lec. and a 2-hr. lab-demonstration period. Fundamentals of news gathering and writing.

19. **Copy Editing and Make-Up.** I, II. 3 hr. PR: Journ. 18. Required of all journalism majors. Two lec. and a 2-hr. lab-demonstration period. Fundamentals of news gathering and writing.

80. **Introduction to Broadcasting.** I, II, S. 3 hr. Survey of the industry and its role in today's society. Historical development of broadcasting, its responsibilities, and job opportunities. Organization of stations and their relation to networks. Federal regulations and industry codes. Technical aspects of radio and television. Brief consideration of programming and production techniques. Field trips to area commercial and educational stations. **(Also listed as Speech 80).**

89. **Appreciation of the Motion Picture.** I, II. 3 hr. Viewing lab. An introduction to the appreciation of the motion picture and the television film as art forms. Principles of aesthetics involved in evaluating films. Attention given to the various types of film: art film, documentary, entertainment, experimental, instructional, etc. Weekly viewing and evaluation sessions. Open to all students **(Also listed as Speech 89).**

108. **The Community Newspaper.** I. 2 hr. Open to all University students; required in Advertising curriculum. Fundamental problems and techniques in the operation and management of small community newspapers.

110. **Typography and Printing Processes.** I, II. 2 hr. Open to all University students; required in Advertising, Public Relations, and Agriculture or Science Specialization curricula. Historical development of type, printing processes, and offset presses and Linotype machine. Identification of type and its application to advertising, newspaper, and magazine production.

113. **Principles of Advertising.** I, II, S. 3 hr. Open to all University students; required in Advertising, Public Relations, and Agriculture or Science Specialization curricula. Two lec. and a 2-hr. lab. period. Survey of the function of advertising in the American economic system for national and retail advertisers. Study of individual advertising and media, copy and layout problems, appeals, research, production, schedules, federal and state laws affecting advertising, and ethics. Practical laboratory work in writing and layout of advertisements.

114. **Newspaper Advertisement Selling.** I, II. 2 hr. PR: Journ. 113. Required in Advertising curriculum. One conference and 5 lab. hours arranged. Selling of space, preparation of retail copy, and servicing local newspaper accounts for the **Daily Athenaeum.** Students handle specific assignments, develop new accounts, and apply the mechanics and psychology of space-selling. Enrollment restricted.

115. **Advertising Copy and Layout.** II. 2 hr. PR: Journ. 113 or Marketing 120. Required in Advertising curriculum. Two lec. and a 2-hr. lab. arranged. Applying tested advertising methods to the preparation of merchandise copy; layout design; production of publication advertising. Emphasis on sales appeals, attention factors, layout planning, illustrations, copy writing, copy testing, and production methods and problems for retail and national advertisers.

118. **Reporting.** I, II. 3 hr. PR: A grade of "C" or higher in Journ. 18. Required of majors in all sequences except Advertising. Nine laboratory hours on the **Daily Athenaeum** and one critique hour.

119. **Advanced Editing and Make Up.** I, II. 3 hr. PR: A grade of "C" or higher in Journ. 19. Required of majors in the News-Editorial curriculum. Nine laboratory hours on the **Daily Athenaeum** and one critique hour.

120. **News Photography.** I, II, S. 2 hr. Open to all University students; required in News-Editorial, Public Relations, and Radio-Television curricula. One lec. hour, 1 demonstration hour, and one 2-hr. lab. An introduction to basic photographic principles. Students use several types of cameras, and learn to develop, print and enlarge. No laboratory fee is charged for the course, but each student is required to purchase his own film and enlarging paper which will total between $10.00 and $15.00. In addition, each student is urged to rent a camera from the Book Store at $20.00 per semester. Rental may apply toward purchase. All chemicals are provided by the School.

128. **Reporting of Public Affairs.** II. 2 hr. PR: Journ. 18 or consent. Reporting of local, state and federal government activities and other public affairs. Includes visits to public agencies and training in spot news and depth reporting in public affairs. Required in News-Editorial curriculum.

170. **Mechanical Composition.** II. 1 hr. Open to all University students. The fundamentals of operation, care and maintenance of the Linotype. The use of mechanically produced type in newspapers and other publications. Special problems in mechanical composition. One lec. and 1 lab. hour.

182. **Radio News.** I. 3 hr. PR: Journ. 80 or consent. The development of news from the sources to presentation on the air. Emphasis upon style, including interview technique and on-the-spot reporting. Designed to meet requirements of present day radio reporting. Laboratory work includes actual preparation for presentation of news on the air.

183. **Television News.** II. 3 hr. PR: Journ. 182 or consent. The adapting of journalism news techniques to television news gathering, preparation, and presentation. Emphasis upon motion picture news coverage, editing, writing; experience in on-the-spot sound film interviews. Laboratory work includes actual preparation for presentation of news on the air.

189. **Techniques of Motion Picture Production.** I, II. 3 hr. Laboratory fee. An introduction to basic film making principles, with consideration given to motion picture directing, editing, lighting, cinematography, and sound recording. Lecture and laboratory. (Also listed as Speech 189).

201. **Interpreting Current Events.** I, II, S. 1 hr. Open to all University juniors, seniors, and graduates. A study of national and world news developments, their backgrounds and their meanings.

203. **Media Management and Promotion.** I, II, S. 3 hr. PR: Journ. 113, Journ. 115. Advertising seniors must take Journ. 203, Journ. 204 or Journ. 210. Problems, functions, and responsibilities in communications media organization, operation, management, and promotion. Special emphasis on case-study of media management and promotion in the Appalachian area.

204. **Advertising Markets and Media.** I, II, S. 3 hr. PR: Journ. 113. Advertising seniors must take Journ. 203, Journ. 204 or Journ. 210. A study of advertising planning, buying, and scheduling by advertisers, media, and advertising agencies on national and local levels. Seminar discussions and assignments with special emphasis on problems related to Appalachian markets and media.

210. **Advertising Production.** I, II, S. 3 hr. PR: Journ. 110. Advertising seniors must take Journ. 203, Journ. 204 or Journ. 210. A study and application of the processes and operations involved in carrying print advertising from the finished layout through production into print. Study includes the techniques of art production, advanced typography, and make up. The student must acquire certain tools and supplies for laboratory work. Expense should not exceed $15.00.

212. **Public Relations.** I, II, S. 3 hr. Open to all University students; required in Public Relations curriculum. Principles, problems, and practices concerned in

the relationships of businesses, industries, and non-profit organizations with their respective publics; practice in the evaluation of existing PR programs and their refinement for further effectiveness.

213. **Industrial Journalism.** II. 2 hr. Open to all University students; required in Public Relations curriculum. A study of the relations between industry and its many publics, with emphasis on internal and external company publications as public relations media. Extensive practice in planning and writing materials and in page make up for industrial publications and trade journals.

215. **High School Journalism.** II, S. 2 hr. Open to all University students. A survey of scholastic publications problems and techniques; suggested methods of instruction.

220. **Newspaper and Magazine Article Writing.** II. 2 hr. Open to all University students. A seminar-type course devoted to the writing, editing, and marketing of features, including reviews and critical articles.

227. **History of Journalism.** I, S. 3 hr. PR: Hist. 52 and 53 or consent. Open to all University students; required in News-Editorial curriculum. A study of the impact of the American press on the nation; the development of today's communications media from the beginnings in 17th Century England and in the American colonies; an examination of the great names in journalism from the standpoint of their contributions to today's journalism; freedom of the press and its current implications.

228. **Law of the News Media.** II. 3 hr. For seniors and graduate students. A study of the law as it affects the mass media. Considered are such areas as libel, public records, criminal pre-trial publicity, freedom of information, obscenity. Required in News-Editorial curriculum.

230. **Editorial and Interpretive Writing.** I, II. 3 hr. Open to all University students; required in News-Editorial and Public Relations curricula. Writing and analyzing editorials and columns; a study of the editorial page and editorial ethics, problems and policies; a study of the vital elements of libel, privacy, contempt, and other phases of law of the press.

239. **Seminar in Advertising-Management Problems.** I. 2 hr. PR: Senior standing and major or minor in Advertising. Required in Advertising curriculum. Current trends in advertising, merchandising, and distribution problems. Students develop individual projects in some phase of advertising or management.

241. **Journalism Problems.** I, II, S. 1-3 hr. For seniors and graduates. An intensive study, independently conducted, of a specialized area or problem in journalism to be approved by the Dean.

242. **Advanced Journalism Problems.** I, II, S. 1-3 hr. A continuation of Journ. 241.

243. **International Communications.** I. 3 hr. International wire services. Coverage of world news in newspapers of the United States and foreign countries; and desirability of a free flow of information to and from the United States. United Nations efforts to lower news barriers will be examined.

281. **Public Affairs Programming.** I. 3 hr. PR: Journ. 183 or consent. The basic principles of evaluating and documenting public issues into television and radio presentation form. Includes methods of program selection, research, writing, sources and type of content materials.

282. **Public Affairs Programming.** II. 3 hr. PR: Journ. 281. Continuation of Journ. 281. An in-depth laboratory course in actual preparation of materials for inclusion of public issues programs. Work includes filming and recording interviews, statements, background materials, obtaining and selecting supporting sound, music, art.

286. **Radio and Television Advertising.** I. 3 hr. Open to all University students. Historical development of radio and TV as advertising media, including rates, listener survey, sponsorship problems, and promotion. Writing of radio and television commercials, programs, and preparation of sales and sales promotion plans for stations, national and retail advertisers. Federal regulations affecting broadcast media.

The Division of Military Science and The Division of Aerospace Studies

MILITARY SCIENCE FACULTY AND STAFF

Charles G. Ives, COL., B.S., *Professor of Military Science* (1967), 1966.
Herbert E. Clark, LTC., B.S., *Assistant Professor of Military Science* (1965).
Nelson R. Bickley, Jr., MAJ., B.A., *Assistant Professor of Military Science* (1966).
Thomas R. Bruffy, MAJ., B.A., *Assistant Professor of Military Science* (1967).
Robert B. Dail, MAJ., B.A., *Assistant Professor of Military Science* (1966).
George Geczy, Jr., MAJ., B.A., *Assistant Professor of Military Science* (1965).
Robert M. Hattler, CPT., B.S., *Assistant Professor of Military Science* (1966).
Patrick W. McClintic, MAJ., B.S., *Assistant Professor of Military Science* (1967).
Anthony A. Polis, CPT., B.S., *Assistant Professor of Military Science* (1966).
Robert B. Snider, SGM., *Sergeant Major in Military Science* (1963), 1959.
J. Garland Hughes, MSG., *Instructor in Military Science* (1966).
Joe Gravens, Jr., SFC., *Instructor in Military Science* (1966).

AIR FORCE AEROSPACE STUDIES FACULTY AND STAFF

Chaz M. Holland, COL., M.B.A., *Professor of Aerospace Studies* (1966).
James W. Barkwill, LTC., B.S., *Assistant Professor of Aerospace Studies* (1965).
Thomas G. Birr, MAJ., B.A., *Assistant Professor of Aerospace Studies* (1965).
Albert S. Krause, Jr., MAJ., M.S., *Assistant Professor of Aerospace Studies* (1967).
Robert L. VanMeter, MAJ., A.B., *Assistant Professor of Aerospace Studies* (1966).
James R. Curtis, CPT., B.S., *Assistant Professor of Aerospace Studies* (1967).
Keith E. Kiplinger, CPT., B.S., *Assistant Professor of Aerospace Studies* (1966).
Nathan H. Thomas, CPT., B.S., *Assistant Professor of Aerospace Studies* (1964).
Walter T. Bergstrom, Jr., MSG., *Sergeant Major in Aerospace Studies* (1965).
Paul Blythe, TSG., *Administrative Assistant in Aerospace Studies* (1965).
Alvie R. Fortney, SSG., *Administrative Assistant in Aerospace Studies* (1964).
David H. Love, SSG., *Administrative Assistant in Aerospace Studies* (1966).
Robert E. Seanor, SSG., *Administrative Assistant in Aerospace Studies* (1966).
George W. Musser, A1C., *Administrative Assistant in Aerospace Studies* (1967).
Larry W. Unger, A1C., *Administrative Assistant in Aerospace Studies* (1964).

COURSES OF INSTRUCTION

BASIC COURSE—FIRST YEAR (Army)

Military Science 1. 2 hr. Leadership Laboratory; Organization of the Army; Military Weapons. Three hours per week during the first half of the semester; one hour per week during the second half of the semester.

Military Science 2. 2 hr. Leadership Laboratory; U. S. Army and National Security; Counterinsurgency Operations. One hour per week during the first half of the semester; three hours per week during the second half of the semester.

GENERAL MILITARY COURSE (GMC)—FIRST YEAR (Air Force)

Air Force Aerospace Studies 1. 2 hr. Nature and Principles of War, National Policy and Power, U.S. Defense Establishment, U.S. Air Force. One classroom hour per week throughout the semester and two hours per week of Corps Training during the first half of the semester.

Air Force Aerospace Studies 2. 2 hr. U.S. Strategic Offensive Forces, U.S. Strategic Defensive Forces, Civil Defense. Two classroom hours per week throughout the semester, consisting of one hour of academics plus one hour of Corps Training.

BASIC COURSE—SECOND YEAR (Army)

Military Science 3. 2 hr. Leadership Laboratory; Map Reading; Small Unit Tactics; 4 hr. per week during the first half of the semester; 2 hr. per week during the second half of the semester.

Military Science 4. 2 hr. Leadership Laboratory; American Military History; 2 hr. per week during the first half of the semester; 4 hr. per week during the second half of the semester.

GENERAL MILITARY COURSE (GMC)—SECOND YEAR (Air Force)

Air Force Aerospace Studies 3. 2 hr. U.S. General Purpose Forces, Tactical Air Forces, U.S. Aerospace Support Forces. One classroom hour per week throughout the semester and two hours per week of Corps Training during the first half of the semester.

Air Force Aerospace Studies 4. 2 hr. U.S. Aerospace Support Forces, Conflict between Democracy and Communism, Alliances and Alignments, Contemporary Military Thought. Two classroom hours per week throughout the semester, consisting of one hour of academics plus one hour of Corps Training.

ADVANCED COURSE—THIRD YEAR (Army)

Military Science 105. 3 hr. PR: Basic course or equiv.* Leadership Laboratory; Leadership; Military Teaching Methods; Branches of the Army; 3 hr. per week during second half of the semester.

Military Science 106. 3 hr. Leadership Laboratory; Small Unit Tactics; Counterinsurgency; 3 hr. per week during the first half of the semester and 5 hr. per week during the second half of the semester.

PROFESSIONAL OFFICER COURSE (POC)—THIRD YEAR (Air Force)

Air Force Aerospace Studies 105. 3 hr. PR: Basic Course or equiv.* Corps Training; Growth and Development of Aerospace Power. A survey course describing the nature of war, development of airpower in the United States, and Air Force concepts, doctrine and employment. 3 class hours. 1 Corps Training hour per week.

Air Force Aerospace Studies 106. 3 hr. PR: Aerospace Studies 105 or consent. Corps Training; Growth and Development of Aerospace Power. Astronautics and space operations, the future development of aerospace power, and the United States space programs, vehicles systems and problems in space exploration. 3 class hours. 1 Corps Training hour per week.

*Equivalent credit may be granted by Registrar of the University and either the Professor of Military Science or the Professor of Aerospace Studies on the basis of prior military service or ROTC training other than courses in Military Science or Aerospace Studies taken at this University.

ADVANCED COURSE—FOURTH YEAR (Army)

Military Science 107. 3 hr. Leadership Laboratory; Role of the U.S. in World Affairs; Command and Staff; Estimate of the Situation and Combat Orders; Army Administration; 5 hr. per week during the first half of the semester and 3 hr. per week during the second half of the semester.

Military Science 108. 3 hr. Leadership Laboratory; Logistics, Supply Management; Military Law; Map Reading Review; Service Orientation; 3 hr. per week during the first half of the semester and 5 hr. per week during the second half of the semester.

PROFESSIONAL OFFICER COURSE (POC)—FOURTH YEAR (Air Force)

Air Force Aerospace Studies 107. 3 hr. PR: Aerospace Studies 105 and 106 or consent. Corps Training. Intensive study of Military law, Management, Command and Staff Policies, and seminar of leadership theory and career opportunities in the Air Force. 3 class hours. 1 Corps Training hour per week.

Air Force Aerospace Studies 108. 3 hr. PR: Aerospace Studies 105, 106, and 107 or consent. Corps Training. Study of human relations, problem solving techniques, management and leadership case studies; seminar on the junior officer in the Air Force. 3 class hours. 1 Corps Training hour per week.

The School of Physical Education

FACULTY

Ray O. Duncan, Ed.D., *Dean and Professor of Physical Education* (1952).
W. Quentin Barnette, M.A., *Assistant Professor of Physical Education* (1950).
Charity White Beto, M.S., *Associate Professor of Physical Education* (1957), 1946.
Kittie Jean Blakemore, M.S., *Assistant Professor of Physical Education* (1964), 1960.
William A. Bonsall, M.S., *Assistant Professor of Physical Education and Gymnastics Coach* (1958), 1950.
Robert C. Bowden, M.A., *Instructor in Physical Education and Assistant Football Coach* (1966).
Robert N. Brown, A.B., *Assistant Professor of Physical Education and Director of Intercollegiate Athletics* (1954), 1950.
Claude H. Buckley, M.Ed., *Instructor in Physical Education and Assistant Football Coach* (1966).
Phillip Callicut, B.S., *Trainer and Instructor in Physical Education* (1967).
Wincie Ann Carruth, Ph.D., *Professor of Physical Education and Chairman of Department of Physical Education for Women* (1957).
James A. Carlen, B.S., *Instructor in Physical Education and Head Football Coach* (1966).
James Chamarro, B.S., *Instructor* (part-time) *in Physical Education* (1966).
E. Eugene Corum, M.S., *Assistant Professor of Physical Education* (1960), 1950.
Dale Evans, B.S., *Instructor in Physical Education and Assistant Football Coach* (1967).
Jack C. Fligg, M.A., *Instructor in Physical Education and Assistant Football Coach* (1966).
Kevin Gilson, B.S., *Instructor in Physical Education and Swimming Coach* (1966).
Mary Kay Gilson, B.S., *Instructor in Physical Education* (1965).
Grace M. Griffin, A.M., *Professor Emeritus of Physical Education* (1957), 1923.
Albert C. Gwynne, M.S., *Assistant Professor of Physical Education and Trainer* (1964), 1934.
Stephen Harrick, M.A., *Associate Professor Emeritus of Physical Education* (1955), 1924.
John W. Hesen, M.D., *Associate Professor of Physical Education and Athletic Team Physician* (1966), 1957.
William D. Hicks, B.A., *Instructor in Physical Education and Assistant Football Coach* (1966).
Frederick J. Holter, Ph.D., *Professor of Physical Education and Chairman of Department of Health Education and Chairman of Graduate Studies* (1948), 1947.
Joe M. Hutchison, Jr., M.S., *Assistant Professor of Recreation* (1961), 1957.
Richard E. Inman, B.S., *Instructor in Physical Education and Assistant Football Coach* (1966).
Garland E. Moran, Jr., M.A., *Instructor in Physical Education and Assistant Basketball Coach* (1965).
Samuel J. Morris, M.D., *Professor Emeritus of Physical Education* (1955), 1912.
Lawrence G. Myers, M.S., *Instructor in Physical Education and Soccer Coach* (1965).
George Nedeff, M.S., *Instructor in Physical Education and Wrestling Coach* (1967).
Norman Parsons, B.S., *Instructor* (part-time) *in Physical Education* (1967).
Mary Jane Pearse, M.S., *Assistant Professor of Physical Education* (1966), 1958.
Dale Ramsburg, M.S., *Instructor in Physical Education and Baseball Coach* (1967).
James L. Riffle, M.S., *Instructor in Safety Education* (1965).
Stanley E. Romanoski, M.S., *Instructor in Physical Education and Coach of Track Athletics* (1957).
John G. Scherlacher, M.Ed., *Professor of Recreation and Chairman of Department of Recreation* (1960), 1947.
John Semon, M.S., *Associate Professor of Physical Education and Chairman of Department of Physical Education for Men* (1955), 1943.
Thomas J. Sheehan, Ph.D., *Associate Professor of Physical Education* (1965).

J. Edward Shockey, B.S., *Instructor in Physical Education and Assistant to Athletic Director* (1966), 1950.
David E. Tork, B.S., *Instructor in Physical Education; Assistant Director of Development* (1964), 1963.
Patrick A. Tork, M.S., *Professor of Physical Education and Assistant to the Dean; Assistant to the Director of Athletics* (1960), 1943.
Raymond C. Waters, M.A., *Instructor in Physical Education and Head Basketball Coach* (1965).
Charles F. Welty, B.S., *Instructor in Physical Education and Assistant Trainer* (1965).
Mary Katherine Wiedebusch, B.S., *Instructor in Physical Education* (1955).
Alcine J. Wiltz III, M.F.A., *Assistant Professor of Physical Education* (1967).
C. Peter Yost, Ph.D., *Professor of Physical Education and Chairman of Department of Safety Education* (1963), 1946.

General Information

The objectives of the School of Physical Education are:

1. To conduct a general program of physical education for University students.
2. To provide professional preparation for careers in physical education, athletic coaching, recreation, health education, safety education, and pre-physical therapy.
3. To provide an intramural activities program for students and faculty.

ORGANIZATION

Department of Physical Education for Men
Department of Physical Education for Women
Department of Recreation
Department of Health Education

FACILITIES

The Field House provides facilities for classes, intramural sports, recreation activities, and intercollegiate athletics. It also contains the administrative offices of the School of Physical Education.

Elizabeth Moore Hall provides physical education, intramural, and recreation facilities for women students. It also houses the offices of the Department of Physical Education for Women.

Mountainlair, the student activities center, provides facilities for bowling and billiards.

Mountaineer Field is located within the stadium. It has a seating capacity if 35,000 and provides facilities for intercollegiate football and track and field events.

The administrative offices of the Department of Intercollegiate Athletics are also located in the stadium.

Outdoor facilities for the physical education, intramural sports, recreation, and intercollegiate athletics are located in the stadium and on the Evansdale Campus.

The men's swimming pool is located in the "Old" Mountainlair.

INTRAMURALS

A broad intramural sports program for men and women is provided by the School. It is the aim of the intramural program to encourage all students of the University to participate in organized athletic sports and wholesome active recreation. Competition is promoted among student groups and individuals. Groups such as classes, fraternities, dormitories, and other nonfraternity units, form the foundation for activities in competitive sports.

STUDENT ORGANIZATIONS

Members of the staff of the School of Physical Education serve as advisers to student organizations.

Physical Education Major Club

Membership in the Physical Education Major Club is open to all majors and minors in Physical Education and is affiliated with the American Association for Health, Physical Education, and Recreation. The purposes of the Club are to increase interest in the profession and to provide additional professional opportunities.

Dolphin Club

The purposes of Dolphin are to stimulate and maintain interest in synchronized swimming and to present a water pageant in the Spring. Membership is open to all University students who pass the swimming requirements that have been determined by the group.

Orchesis

Orchesis, the University dance group, is open to any student who has taken two or more courses in modern dance technique and who can meet the group's requirement in technique and composition. The purpose is to stimulate interest and understanding of modern dance through demonstrations and public performances.

WVU Professional Recreation Society

The club is open to those students who are Recreation majors or minors. The club has as its objectives: (1) the raising of professional standards, and (2) keeping informed of developments in the recreation field on state and national levels. The club is an affiliate of the West Virginia Recreation Society and National Recreation and Park Association.

Sigma Delta Psi

Sigma Delta Psi is a national honorary athletic fraternity for men. The objective of this organization is to promote physical, mental, and moral development of college students. To qualify for membership, the individual must meet certain requirements.* Trials will be afforded candidates each semester and, in addition, records compiled by prospective members in regularly scheduled intramural activities and athletic contests shall be considered valid.

Fencing Club

The Fencing Club of the University is open to all students. The purpose of the club is to promote interest and to develop the skill of the members.

GENERAL PROGRAM FOR MEN AND WOMEN

The significant contributions which General Physical Education makes to the education of college students are the appreciation of the human organism (how the body can move) and the ability and capacity to control and direct the movements of the body with skill and intelligence. As an outcome of the experiences in physical education, the student understands movement, physical weakness and strength, how to overcome weakness, use strength, and the values of including physical activity in life.

The objectives of the general program of physical education are:

1. To develop an appreciation of the body and its capacity to move.
2. To develop a well-coordinated and poised body which enables the student to move with joy and satisfaction.
3. To develop endurance and strength needed for effective living.
4. To develop an understanding of the relationship of physical fitness to the individual's physical, social, and mental well-being, and the knowledge of how to develop physical fitness and a desire to maintain it.

*See Intramural Handbook.

5. To develop an appreciation of the social and cultural aspects of sports and dance in American society.
6. To develop an understanding of the role of exercise in living and a desire to participate in physical activity.
7. To relate the physical body in its functioning to the emotional, mental, social and spiritual aspects of the person as to help students achieve efficient and enjoyable living.
8. To teach skills and appreciation in the physical activities that are part of our social heritage—sports, games, dance, aquatics and self-testing activities.
9. To relate these activities and their use to the social and cultural background of the individual's society.

The University's physical education requirements should be met by the men in their first year of residence and by women in their first two years of residence. Two hours of general program are required for men and four hours for women. Those students who are unable to participate in the regular program because of physical handicaps are assigned to the adapted program.

GENERAL PROGRAM COURSES FOR MEN

1 and 2. **General Program for Men.** 1 hr. Required of all freshmen in the University (except majors in Physical Education). Students who are found to be physically unable to engage in regular activity will be assigned to an adapted program of physical education recommended by University physicians and under the direction of the staff of the department.
Student may select any one of the combinations of activities listed below. He will not be permitted to repeat his choice the second semester, but he will make another choice of **entirely different** activities. The student's adviser is responsible for seeing that a student does not repeat the same activities.

The combination of activities are:

A—Golf and Badminton
B—Conditioning and Gymnastics
C—Handball and Swimming
D—Tennis and Archery
E—Volleyball and Archery
F—Tennis and Volleyball
G—Handball and Badminton
H—Conditioning
I—Adapted Program
1J and 2J—Horseback Riding. Open to men and women.

GENERAL PROGRAM COURSES FOR WOMEN

General Program for Women. Physical Education 3, Fundamentals of Physical Education, is required of all freshman women students in the fall semester.

The student should select one course from each of the following groups to complete the 4-hr. requirement:

Group 1—Phys. Ed. 14, 15, 16 . . . . . (Swimming)

Group 2—Dance 5, 11, 17, 18 . . . . . (Dance)

Group 3—Phys. Ed. 1J or 2J, 4, 7, 8, 9, 10, 13, 21, 25 . . . . . (Individual or Team Sports)

3. **Fundamentals of Physical Education.** I. 1 hr. Physical self-image, principles of movement, movement patterns in sports and daily living. Required of freshman women.

4. **Golf and Bowling.** I, II. 1 hr.

5. **Ballroom Dance.** I, II. 1 hr. Fundamentals of ballroom dancing. For men and women students.

7. **Archery.** I, II. 1 hr.

8. **Recreational Sports.** I, II. 1 hr. Badminton, table tennis, deck tennis, and shuffleboard.

9. **Team Sports. I.** 1 hr. Volleyball and hockey.

10. **Team Sports. II.** 1 hr. Basketball and softball.

11. **Folk Dancing. I, II.** 1 hr.

13. **Tennis and Bowling. I, II.** 1 hr.

14. **Elementary Swimming and Diving. I, II.** 1 hr.

15. **Intermediate Swimming and Diving. I, II.** 1 hr.

16. **Lifesaving and Water Safety. II.** 1 hr. (Opportunity to qualify for American Red Cross Senior Lifesaving Certificate.)

17. **Elementary Modern Dance. I, II.** 1 hr.

18. **Advanced Modern Dance. I, II.** 1 hr. PR: Phys. Ed. 17. (Open to men and women).

21. **Physical Fitness. I, II.** 1 hr.

25. **Fencing. I, II.** 1 hr.

Physical Education for Elementary Teachers (*Not for P.E. Majors*)

Women students who are planning to teach in elementary grades are required to take the following courses to meet the 4-hr. requirement:

41. **Physical Education for Elementary Teachers. I.** 1 hr. (W).

42. **Physical Education for Elementary Teachers. II.** 1 hr. (W).

43. **Physical Education for Elementary Teachers. I, II.** 2 hr.

Men students who are planning to teach in elementary grades are required to take the following courses:

1. **General Program for Men. I.** 1 hr.

2. **General Program for Men. II.** 1 hr.

43. **Physical Education for Elementary Teachers. I, II.** 2 hr.

STANDING COMMITTEES

Executive: Mr. Duncan (*Chairman*); Miss Carruth; Messrs. Brown, Holter, Scherlacher, Semon, Tork, and Yost.
Undergraduate Curriculum: Miss Carruth (*Chairman*); Miss Blakemore; Messrs. Barnette, Scherlacher, Semon, and Yost.
Graduate Curriculum: Mr. Holter (*Chairman*); Miss Carruth; Messrs. Scherlacher, Semon, Sheehan, and Yost.
Intramural Activities: Mr. Myers (*Chairman*); Mrs. Gilson and Mr. Romanoski.
Placement: Mr. Tork (*Chairman*), Mrs. Beto and Mr. Semon.
Scholarship: Mr. Yost (*Chairman*); Miss Blakemore and Mr. Hutchison.
Student-Faculty Relations: Mrs. Wiedebusch (*Chairman*); Mrs. Pearse; Messrs. Hutchison, Myers, and Riffle.
Swimming and Water Safety: Mr. Yost (*Chairman*); Miss Blakemore and Mr. Gilson.
Extended Programs: Mr. Scherlacher (*Chairman*); Miss Carruth; Messrs. Holter, Semon, and Yost.
Visiting: Forrest G. Clark (*Chairman*); Dr. Grover Hedrick, Mr. C. S. Kistler, Mrs. J. B. McCue, and Lt. R. E. Stanley.
Research: Mr. Sheehan (*Chairman*), Messrs. Holter and Yost.

Requirements for Degrees

The degree of Bachelor of Science in Physical Education or the degree of Bachelor of Science in Recreation may be conferred upon any student who (1) satisfies the entrance requirements, (2) offers at least 128 hours, (3) has an overall average of "C" on all work attempted, and (4) meets the School and departmental requirements.

All graduates who entered the University for the first time in September, 1964, or later, must complete the University Core Curriculum requirements in order to graduate (see page 48).

PHYSICAL EDUCATION: REQUIRED AND ELECTIVE SUBJECTS

Of the 128 hours which are required for the degree of Bachelor of Science in Physical Education, at least 45 hours are required in the School of Physical Education. The remaining hours must be selected from such courses as may be approved by the adviser. A candidate for a degree is advised to make a selection of one of the teaching combinations on page 389 and to complete the number of semester hours required in each training group.

Courses are arranged to meet University requirements for the degree of Bachelor of Science in Physical Education as well as State requirements for teacher certification. The curriculum for the four-year course has been so arranged that consideration is given to various activities which should constitute a well-rounded program of physical education for children and youth. The courses are arranged in twelve groups as follows:

1. Required activity courses in Physical Education for men: Phys. Ed. 51, 52, 53, 54, 55, 56, 121, 130, 131, and for women: 31, 32, 33, 54, 61, 63, 66, 130, 131.
2. Required theory courses in Physical Education for both men and women, unless otherwise indicated are: Phys. Ed. 71, 175, 176, 177, 180, 191, 278.
3. Required courses in Dance: 5, 132 for men and women; 35, 36 for women.
4. Required courses in Recreation: Rec. 4.
5. Required courses in Health Education: Health Ed. 2 and 101 or 102.
6. Required courses in Safety Education: Safety Ed. 127 and Safety Ed. 181.
7. Required courses in English.
8. Required courses in Science which furnish a background for physical education.
9. Required courses in Education which consider the principles of general education.
10. Required courses in Social Studies.
11. Required courses in Music and Art.
12. Required courses in Mathematics.
13. Required courses in Speech.
14. Required courses in Military Science or Aerospace Studies.
15. Elective courses.

Each student must pass a thorough physical examination before he will be allowed to enroll in this program. Special emphasis is placed upon personal and professional qualifications of the student as well as upon a high standard of scholarship.

Student teaching in physical education is available in University High School and in the elementary schools of Morgantown. Opportunity also is provided in University High School for practice coaching of high school athletic teams.

Advisers

Designated members of the School's staff serve as advisers for all major students in physical education and recreation.

It is the student's responsibility to know the requirements for graduation, second teaching field, and for certification. All students are urged to acquaint themselves with these regulations immediately.

*Courses marked (M) are open to men; courses marked (W) are open to women; all others are open to both men and women.

Recommendation for Certification

The prospective teacher who intends to apply for certification for school service in the State should take care to satisfy requirements for other teaching fields and required courses in Education and Physical Education.

Students who are planning a teaching career must meet the certification requirements that are in effect at their first registration in the teacher preparation program. Students may learn of the requirements for certification from the College of Human Resources and Education. Students are urged to become familiar with these certification regulations during their freshman year.

For teacher certification, the student shall be responsible for every registration in a course. The grade-point average shall be computed on *all* work attempted.

Students interested in teacher preparation may elect the following certified curriculums:

A—Elementary (Grades 1-9)
B—Teaching Physical Education (Grades 1-12)
C—Secondary (Grades 7-12)

Suggested teaching combinations for B and C above:

Grades 1-12	*Secondary Grades* 7-12
1. Art	1. Art
2. Language Arts	2. English
3. Mathematics	3. Industrial Arts
4. General Science	4. Journalism
5. Social Studies	5. Speech
6. Speech	6. Mathematics

(Other combinations approved by the adviser)

CURRICULUM FOR PHYSICAL EDUCATION MAJORS

Degree: Bachelor of Science in Physical Education

The curriculum for majors is organized to provide professional preparation for men and women who are desirous of becoming teachers of health and physical education in elementary schools, high schools, and colleges. The courses are arranged to meet the University requirements for the degree of Bachelor of Science in Physical Education, as well as the State requirements for teacher education in secondary and elementary schools. Advanced ROTC cannot be counted in the total hours toward graduation.

SECONDARY

Women

FIRST YEAR				SECOND YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3	Educ. 105	3	Educ. 106	3
Biol. 1	4	Biol. 2	4	Educ. 100	1	Soc. Sci. 2	3
Hist. 1	3	Hist. 2	3	Soc. Sci. 1	3	P.E. 54	2
Health Ed. 2	2	Music 10	3	English 35 or 127	3	P.E. 66	1
Dance 5	1	P.E. 32	1	Math. 21	2	English 36 or 128	3
P.E. 31	1	P.E. 33	1	P.E. 61	1	Rec. 4	3
Dance 35	1	Dance 36	2	P.E. 63	1	Math. 22	2
P.E. 71	2			Speech 3 or 11	3		
	17		17		17		17

THIRD YEAR				FOURTH YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
Safety Ed. 127	2	Zool. 271	4	P.E. 191	2	P.E. 278	3
Safety Ed. 181	2	P.E. 131	1	*Educ. 120	4	*Educ. 120	4
Health Ed. 102	2	Dance 132	1	*Educ. 124	6	*Educ. 124	6
P.E. 130	1	P.E. 176	2	*Educ. 152	2	*Educ. 152	2
P.E. 175	5	P.E. 177	3	Educ. Elective	2	Elective	3
Art 30	3	P.E. 180	2	Elective	3		
Elective	3	Elective	4				
	18		17		19		18

*Required for those students desiring certification for teaching. May be taken the first or second semester of senior year.

SECONDARY

Men

FIRST YEAR				SECOND YEAR			
Firse Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
Biol. 1	4	Biol. 2	4	Math. 21	2	English 36 or 128	3
English 1	3	English 2	3	English 35 or 127	3	Speech 3 or 11	3
Hist. 1	3	Hist. 2	3	Soc. Sci. 1	3	Soc. Sci. 2	3
Mil. or A.S. 1	2	Mil. or A.S. 2	2	Music 10	3	P.E. 56	2
P.E. 71	2	Health Ed. 2	2	Mil. or A.S. 3	2	P.E. 54	2
P.E. 53	2	P.E. 51	2	P.E. 55	2	Mil. or A.S. 4	2
Dance 5	1	Rec. 4	3	Health Ed. 102	2	Math. 22	2
P.E. 52	1						
	18		19		17		17

THIRD YEAR				FOURTH YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
P.E. 121	2	Dance 132	1	P.E. 191	2	P.E. 278	3
P.E. 130	1	Zool. 271	4	Educ. 120 } *	12	Educ. 120 } *	12
P.E. 175	5	P.E. 177	3	Educ. 152 } *		Educ. 152 } *	
Art 30	3	P.E. 131	1	Educ. 124 } *		Educ. 124 } *	
Educ. 105	3	P.E. 176	2	Elective	3	Elective	3
Educ. 100	1	P.E. 180	2				
Safety Ed. 181	2	Educ. 106	3				
Safety Ed. 127	2	Elective	3				
	19		19		17		18

*Student teaching block—to be taken either first or second semester.

ELEMENTARY

Women

FIRST YEAR				SECOND YEAR			
First Sem.	*Hr.*	*Second Sem.*	*Hr.*	*First Sem.*	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3	Educ. 105	3	Soc. Sci. 2	3
Biol. 1	4	Biol. 2	4	Educ. 100	1	English 36	3
Hist. 1	3	Hist. 2	3	Soc. Sci. 1	3	Hist. 53	3
Dance 5	1	Health Ed. 2	2	English 35	3	Art 2	2
P.E. 31	1	Math. 6	3	Hist. 52	3	P.E. 54	2
Dance 35	1	P.E. 32	1	Music 10	3	P.E. 66	1
P.E. 71	2	P.E. 33	1	Art 1	2	Speech 3 or 11	3
Art 30	3			P.E. 61	1		
	18		17		19		17

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Psych. 1	4	Phys. Sci. 2	4
Health Ed. 101	2	Dance 132	2
Music 11	2	Music 12	2
P.E. 130	1	P.E. 131	1
P.E. 175	5	P.E. 176	2
Safety Ed. 181	2	P.E. 177	3
Safety Ed. 127	2	P.E. 180	2
P.E. 63	1	P.E. 191	2
	19		18

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Educ. 106	3	Educ. 144	2
Educ. 141	3	Educ. 145	2
Educ. 142	3	Educ. 146	6
Educ. 143	2	P.E. 278	3
Geog. 7	3	Hist. 150	3
Math. 270	3	Library Sci. 203	3
	17		19

ELEMENTARY

Men

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Biol. 1	4	Biol. 2	4
Hist. 1	3	Hist. 2	3
Mil. or A.S. 1	2	Mil. or A.S. 2	2
Dance 5	1	Health Ed. 2	2
P.E. 53	2	P.E. 51	2
P.E. 71	2	P.E. 52	1
	17		17

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Health Ed. 101	2	Soc. Sci. 2	3
Soc. Sci. 1	3	Art 30	3
Music 10	3	P.E. 54	2
P.E. 55	2	P.E. 56	2
Mil. or A.S. 3	2	Mil. or A.S. 4	2
Art 1	2	Speech 3 or 11	3
Educ. 100	1	Art 2	2
Math. 6	3		
	18		17

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
P.E. 175	5	Dance 132	1
Safety Ed. 127	2	Educ. 141	3
Music 11	2	Geol. 7	3
Educ. 105	3	Educ. 143	2
Hist. 52	3	Music 12	2
Hist. 150	3	Educ. 106	3
		Educ. 142	3
	18		17

FOURTH YEAR*

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Math. 270	3	P.E. 278	3
Hist. 53	3	P.E. 176	2
Lib. Sci. 203	3	P.E. 180	2
Phys. Sci. 1	4	Phys. Sci. 2	4
Safety Ed. 181	2	English 36 or 128	3
English 35 or 127	3	P.E. 177	3
	18		17

*In addition to the above curriculum the student must complete his student teaching block of 10 hours—Education 144, 145, 146.

CURRICULUM FOR RECREATION MAJORS

Degree: Bachelor of Science in Recreation

The major curriculum in recreation is planned primarily to prepare for professional recreation responsibilities in parks and recreation systems, public and private, industries, churches, public housing, hospitals, and similar agencies in a society which has become increasingly leisure oriented.

Of the hours required for the degree, courses are arranged in six groups:

Communications (12)
Core Curriculum (36)
Physical Education, Health Education, Dance, and Safety Education (W-16) (M-15)
Recreation (32)
Field Work (3)
Electives in allied disciplines (at least) (W-31) (M-30)

Electives are to be selected by advisement. Secure a list of recommended electives from the recreation department office. It is generally advisable for recreation majors to prepare themselves in at least two human interest recreation areas by electing courses in arts and crafts, dramatics, music, dance, nature recreation, and sports. Men electing advanced ROTC must add hours required to the above requirements.

During the summer between the junior and senior years and when upper level recreation courses have been completed, all majors are required to do at least eight weeks of supervised recreation leadership field work. The selected agency in which the student will do his work must be approved by the chairman of the department. Arrangements will be made for supervision and visitation. The final report and evaluation by the student must be completed by the end of the succeeding semester.

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Health Ed. 2	2	Hist. (Elect.) (W)	3
Mil. or A.S. 1 (M)	2	Mil. or A.S. 2 (M)	2
Dance 5	1	Music 10 (W)	3
P.E. 50 or 33 (W)	1	Psychol. 1 (M)	4
P.E. 50 or 52 (M)	1	Rec. 11	3
Dance 35 (W)	1	Geol. 5	3
Rec. 1	3	Geol. 2 (Lab.)	1
Zool. 1	4		
	W–15		W–16
	M–16		M–16

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 18	3	Bot. 2	4
Mil. or A.S. 3 (M)	2	Econ. 51 (W)	3
P.E. 31 (W)	1	Mil. or A.S. 4 (M)	2
P.E. 53 (M)	2	Music 10 (M)	3
P.E. 54	2	P.E. 66 (W)	1
Psychol. 1 (W)	4	Dance 132 (M)	1
Rec. 5	2	Rec. 102	3
Rec. 11	3	Speech 11 (W)	3
Speech 11 (M)	3	Sociol. 1	3
	W–15		W–17
	M–17		M–16

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Art 30	3	Drama 100 (M)	3
Eng. Lit. (Elect.) (M)	3	Drama 101 (M)	1
Core A Elect.	3	Econ. 51 (M)	3
Hist. Elect. (M)	3	Eng. Lit. (Elect.) (W)	3
P.E. 130	1	For. 140	3
Rec. 107	3	P.E. 131	1
Safety Ed. 127	2	Dance 132 (W)	1
Safety Ed. 181 (W)	2	Pol. Sci. 120	3
Elect. (W)	3	Rec. 104	3
		Elect. (W)	3
	W–17		W–17
	M–18		M–17

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Drama 100 (W)	3	Journ. 212	3
Drama 101 (W)	1	Psychol. 115	3
For. 142 (M)	2	Rec. 202	3
Rec. 145	3	Rec. 271	3
Rec. 282	3	Elect. (M)	3
Safety Ed. 181 (M)	2	Elect. (W)	6
Sociol. 200 Level	3		
Elect.	3		
	M–16		W–18
	M–16		M–15

Recreation Minor

Those students majoring in other fields may elect to work for a minor in recreation which will prepare them for leadership responsibility in various types of recreation services, such as private agencies, summer programs in communities, school board-sponsored public recreation systems, and park program responsibilities. The following courses, or their equivalents, are recommended:

Course Number and Title	*Hr.*
Rec. 5, Arts and Crafts in Recreation	2
Rec. 11, Nature Recreation and Camping	3
Rec. 102, Program Planning	3
Rec. 104, Functional Facilities Planning	3

Rec. 107, Recreation Leadership	3
Rec. 202, Philosophy of Recreation	3
Rec. 282, Recreation Administration	3
Phys. Ed. 54, Individual and Dual Sports	2

CURRICULUM FOR PRE-PHYSICAL THERAPY STUDENTS

Degree: Bachelor of Science in Physical Education

The following curriculum for pre-physical therapy students is organized to meet the University requirements for the degree of Bachelor of Science in Physical Education as well as satisfying the entrance requirements to physical therapy schools approved by the Council on Medical Education and Hospitals of the American Medical Association. Advanced R.O.T.C. cannot be counted in the total hours toward graduation.

FIRST YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
English 1	3	English 2	3
Biol. 1	4	Biol. 2	4
Hist. 1	3	Hist. 2	3
Dance 5	1	Health Ed. 2	2
P.E. 71	2	Rec. 4	3
P.E. 3 (W)	1	P.E. 32 (W)	1
P.E. 31 (W)	1	P.E. 33 (W)	1
Dance 35 (W)	1	Dance 36 (W)	2
Mil. or A.S. 1 (M)	2	Mil. or A.S. 2 (M)	2
P.E. 52 (M)	1	P.E. 51 (M)	2
P.E. 53 (M)	2		
	W–16		W–19
	M–18		M–19

SECOND YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Soc. Sci. 1	3	Soc. Sci. 2	3
Physics 1	4	Physics 2	4
English 35 or 127	3	English 36 or 128	3
Music 10	3	Art 30	3
P.E. 61 (W)	1	P.E. 54	2
P.E. 63 (W)	1	P.E. 66 (W)	1
Mil. or A.S. 3 (M)	2	Mil. or A.S. 4 (M)	2
P.E. 55 (M)	2	P.E. 56 (M)	2
Elective* (W)	2-3	Elective* (W)	2-3
	W–17-18		W–18-19
	M–17		M–19

THIRD YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Psych. 3	4	Psych. 4	4
Health Ed. 101 or 102	2	Zool. 271	4
Safety Ed. 127	2	Dance 132	1
Safety Ed. 181	2	P.E. 176	2
Speech 3 or 11	3	P.E. 177	3
P.E. 175	5	P.E. 180	2
	W–18		W–16
	M–18		M–16

FOURTH YEAR

First Sem.	*Hr.*	*Second Sem.*	*Hr.*
Chem. 11	4	Chem. 12	4
P.E. 121 (M)	2	PP.E. 131	1
P.E. 130	1	Psych. elect.	3
P.E. 191	2	P.E. 278	3
Elective* (W)	7-8	Elective*	3
Elective* (M)	6		
	W–14-15		W–14
	M–15		M–14

*Electives should be chosen in accordance with admission requirements of the physical therapy school in which the student expects to enroll. Suggested electives are: Educ. 105, 106, Foreign Language (French, German, Italian, Russian, Spanish 1 and 2); Math. 2, 3, 4; Psychol. 110, 116, 122, 125, 218, 222, 229, 236; Sociol. 210, 211, 234, 235, 243; Speech 75, 256; Zool. 231, 232, 233, 235, 236, 237.

Entrance requirements to the various schools of physical therapy vary. The majority of physical therapy schools approved by the American Medical Association accept students if: (1) they have graduated from an approved school of physical education; (2) they have graduated from an approved school of nursing, or (3) they have completed two or three years of college work. Preference is given those students who have specified credits in physics, chemistry, biology, and psychology.

Courses of Instruction

DANCE

35. **Modern Dance Technique.** I. 1 hr.

36. **Movement and Its Rhythmic Structure.** II. 2 hr. PR: Phys. Ed. 35. Understanding the nature and scope of rhythm in physical education programs.

37. **Advanced Modern Dance Technique.** I, II. 1 hr. PR: Phys. Ed. 35. Continuation of Phys. Ed. 35, including methods of teaching.

38. **Dance Composition.** II. 2 hr. PR: Phys. Ed. 35, 36. Problems in force, time, and space as elements of expressive movement.

132. **Folk Dancing.** I, II. 1 hr. Fundamentals and materials of folk dancing.

171. **Basic Rhythms and Dance Accompaniment.** II. 2 hr. PR: One semester of modern dance. Understanding of the basic principles of rhythm as they relate to body movement. (Ability to play the piano is not required.)

215. **Rhythms and Dance.** S. 3 hr. PR: Graduate standing and consent. Principles of movement, materials, and practicum in dance.

219. **Modern Dance Techniques and Composition.** S. 3 hr. PR: Phys. Ed. 35 and 36, graduate standing and consent. Application of scientific principles of movement; basic principles of music as related to dance movement; choreographic principles; practicum in dance movement. Principles for teaching the dance and problems involved in planning programs.

296. **American Folk Dance.** I, S. 3 hr. PR: Phys. Ed. 132 or equiv. or consent. Study of American Square, contra, circle, and round dances and play party games, and their place in community and school recreation programs. Their origin and relationship to the arts and other aspects of American culture. Analysis of techniques in leading and calling.

HEALTH EDUCATION

2. **Personal and Community Health.** I, II. 2 hr. Phases of healthful living which should be understood by all college students. Special emphasis on aspects of personal health.

101. **The Elementary School Health Program.** I, II, S. 2 hr: PR: Educ. 105. Study and analysis of the health program which takes place in the school or through the efforts of school personnel; the organization, educational aspects, and personnel relationships involved in school health services, healthful school living, and health education. Required for teacher certification.

102. **The Secondary School Health Program.** I, II, S. 2 hr. PR: Educ. 105. Study and analysis of the health program which takes place in the school or through the efforts of school personnel; the organization, educational aspects, and personnel relationships involved in school health services, healthful school living, and health education. Required for teacher certification.

201. **Advanced School Health.** I, S. 3 hr. PR: Health Ed. 101, 20 hr. of Education, graduate standing or consent. An analysis of problems in school health services, healthful school living, the nature of health education, and the scope of health instruction which confronts teachers and administrators.

205. **Philosophy of Health Education.** I, S. 3 hr. PR: Health Ed. 2, and 101, graduate standing and consent. Analysis of the scientific bases, purposes, procedures, and content, with implications for school and public health education programs.

PHYSICAL EDUCATION

Professional Curriculum

31. **Team Sports.** I. 1 hr. (W). Fundamentals, skills, and practice in playing soccer and basketball.

32. **Team Sports.** II. 1 hr. PR: Phys. Ed. 31. (W). Techniques and practice in teaching and officiating basketball. Fundamentals, skills, and practice in softball.

33. **Swimming and Diving.** I. 1 hr. PR: Phys. Ed. 14 or equiv. (W).

34. **Tennis and Archery.** I. 1 hr. (W).

*43. **Physical Education for Elementary Teachers.** I, II, S. 2 hr. PR: Phys. Ed. 1 and 2 or 41 and 42, or consent. Philosophy, objectives, identification of physical education, and a broad selection of activities adapted to the primary and intermediate levels. Laboratory work and observation in the elementary schools are required.

50. **Beginning and Intermediate Swimming.** I, II. 1 hr. (M). Instruction in the basic swimming strokes and beginning diving. All physical education and recreation majors who do not pass the swimming skill tests must register for this course.

51. **Fundamentals of Tumbling and Gymnastics.** I. 2 hr. (M).

52. **Advanced Swimming, Lifesaving, and Water Safety.** I, II. 1 hr. (M). PR: Phys. Ed. 50 or equiv. Theory and practice in aquatics and water safety, including American Red Cross Senior Lifesaving Certificate.

53. **Junior and Senior High School Activities and Games.** I. 2 hr. (M). Theory and fundamentals of speedball, soccer, volleyball, archery, and graded games of low organization and lead-up games for grades 1-12.

54. **Individual and Dual Sports.** I, II, S. 2 hr. Theory and practice in fundamentals of badminton, bowling, golf, handball, and tennis.

55. **Fundamentals of Baseball, Basketball, and Wrestling.** I. 2 hr. (M).

56. **Fundamentals of Track and Football and Theory of Coaching.** II. 2 hr. (M).

57. **Advanced Gymnastics.** II. 2 hr. PR: Phys. Ed. 51 (M); Phys. Ed. 61 (W). A study of advanced skills, techniques, and teaching methods in tumbling, regular and special apparatus work and related areas of gymnastics instruction.

61. **Stunts, Tumbling, and Trampoline.** I. 1 hr. (W).

63. **Hockey and Volleyball.** I. 1 hr. (W). Fundamentals, skills, and practice.

66. **Graded Games and Lead-Up Games.** II. 1 hr. Games for all ages which may be used in home, school, playground, and gymnasium, and lead-up games in various sports.

68. **Officiating Athletics.** II. 1 hr. (W). Rules, techniques, and laboratory work.

71. **Orientation in Physical Education.** I. 2 hr. Purposes, scope, and possibilities in health education, physical education, recreation, and coaching in the school program.

121. **Athletic Training.** I. 2 hr. (M). Lectures, demonstrations, and practice work in training and first aid in athletics.

*This course is required for certification for Elementary School teaching certificates.

124. **Instructorship in Swimming, Lifesaving, and Water Safety.** II. 1 hr. PR: Phys. Ed. 52 or equiv. Teaching methods in swimming and water safety. Meets American Red Cross Certification Standards and course completion carries eligibility for teaching swimming, lifesaving, and water safety. Open only to students who have valid lifesaving cards.

130. **Program Assisting. I.** 1 hr.

131. **Program Assisting. II.** 1 hr.

175. **Anatomy and Kinesiology.** I, II. 5 hr. PR: Biol. 1 and 2. Principles of mechanics of body movement in relation to anatomical structure.

176. **The Adapted Program in Physical Education.** II. 2 hr. PR: Phys. Ed. 175. A basic course dealing with deviations from the normal and the organizing and adapting of physical education programs to meet the needs of atypical students or those with special problems.

177. **History and Principles of Physical Education.** II. 3 hr. Development of physical education from early civilization to present time. Basic principles underlying modern programs.

180. **The Physical Education Program in the Elementary School.** I, II. 2 hr. Theory, methods, techniques, and practice of activities in physical education for elementary school children.

191. **Introduction to Tests in Health and Physical Education.** I, II, S. 2 hr. A background course in physical achievement tests. History of development; review of outstanding tests. Essential procedures used in evaluating tests and their results, including statistical analysis.

206. **Program in Individual Sports.** S. 3 hr. PR: Graduate standing and consent. Designed for coaches of interscholastic athletics. A study of advanced coaching techniques and methods in track and field activities, wrestling, and gymnastics.

207. **Program in Team Sports.** S. 3 hr. PR: Graduate standing and consent. Designed for coaches of intercollegiate athletics. A study of advanced techniques, systems of play, offense, defense, methodology, staff organization, and related problems in the coaching of football, basketball, and baseball.

208. **Advanced Athletic Training and Conditioning.** I, S. 3 hr. PR: Phys. Ed. 121, 175; Zool. 171, or equiv. To acquaint graduate students with recent theories, practices, and techniques in the prevention, care, and treatment of athletic injuries.

210. **Program in Sports.** S. 3 hr. (W). PR: Graduate standing and consent. Designed especially for women engaged in teaching and coaching. Organization and administration of individual, dual, and team sports. Practicum in girls' and women's sports.

211. **Organization and Administration of Intramural Sports.** S. 3 hr. PR: 4 hr. of physical education activity courses; graduate standing and consent. Critical analysis with view to justification from standpoint of objectives and of contribution to general welfare of students participating. Organization and administration of programs on secondary and college levels.

212. **Extracurricular Physical Education Activities for Secondary School Girls.** I, S. 3 hr. PR: Graduate standing and consent. Critical analysis of physical education extracurricular activities from the standpoint of objectives and contributions to the general welfare of the participants; value of the activities in the school and community; relationship to the physical education program; problems associated with the organization and administration of the program.

213. **Administration of Athletics.** S. 3 hr. PR: Graduate standing and consent; experience in coaching and administration. The course is designed for persons engaged in actual coaching and administration. A study of the problems associated with the organization and administration of interscholastic and intercollegiate athletic programs and their relationship to physical education.

275. **Principles and Practices of Adapted Physical Education.** I, S. 3 hr. PR: Zool. 171, Phys. Ed. 175, or equiv. Principles and philosophy in building an adapted program, types of injuries, classification of students, and application of adapted exercises.

276. **Physical Education for the Mentally Retarded.** I, S. 3 hr. PR: Consent. Philosophy, objectives, activities, equipment, program planning, and evaluation of physical education programs for the mentally retarded.

278. **Administration of Physical Education.** I, II, S. 3 hr. PR: Phys. Ed. 71, 177. Modern theories in physical education and guiding principles in organization and administration of the program.

292. **Physical Education in the Elementary School.** I, S. 3 hr. PR: Teaching experience or consent. Philosophy, objectives, activities, equipment, utilization of space, program planning, and evaluation for a functional program in elementary school physical education.

294. **Philosophy of Physical Education.** I, S. 3 hr. PR: Graduate standing and consent. Study of the place of physical education in education and modern living; philosophic processes in physical education; critical analysis of various problems confronting the physical educator.

295. **Residence in Corrective Therapy.** S. 6 hr. PR: Phys. Ed. 175, 176, and selected psychology courses. An intensive 6-week course offered during the Summer under the auspices of the professional staff of a hospital. The course consists of 240 clock hours of staff lectures and practical clinical experience in corrective therapy as it is integrated in the physical medicine and rehabilitation program of a hospital.

RECREATION

1. **Introduction to Recreation.** II. 3 hr. A framework into which the other recreation courses with all their implications will fit. Recreation history, trends, concepts, relationship to other fields; surveys of national organizations, leaders, and literature. This course is basic for recreation majors.

4. **Recreation and the School.** I. 3 hr. Open to students with at least sophomore status in physical education. Study of basic concepts of play, recreation, leisure, and their relationship to physical education

5. **Introduction to Arts and Crafts in Recreation.** I. 2 hr. Workshop course. Place of arts and crafts in recreation, their organization, and integration with other phases of recreation.

11. **Nature Recreation and Camping.** II. 3 hr. PR: Rec. majors or consent. Lecture and workshop. Introduction to organized camping movement including purposes, camp sites, equipment, programs and leadership. Exploration of nature recreation and its relationship to community recreation and camping programs.

12. **Social Recreation.** I. 3 hr. Lecture and workshop course. Place of social recreation activities, informal dramatics and music in community center, playground, camp and school extracurricular programs.

102. **Program Planning.** II. 3 hr. PR: Rec. 1. Fundamentals for general program planning; considering needs, facilities, age groups, local customs, climatic factors, etc. Planning involved in playgrounds, indoor centers, playfields, parks, hospitals, voluntary agencies, industry, and camps.

104. **Functional Planning of Recreation Facilities.** II. 3 hr. Lecture and workshop. Problems and principles governing the planning for functional and effective usage of facilities in recreation. Emphasis on playgrounds, playfields, indoor centers, parks, camps, and swimming pools.

107. **Recreation Leadership and Group Work.** I. 3 hr. Meaning of leadership, its application to the field of recreation, and analysis of techniques. Examination of social group work method and its application particularly in national youth organizations.

145. **Field Work.** 3 hr. Recreation majors are required to have at least 8 weeks of supervised recreation leadership field work, usually during summer following junior year and after completion of upper level recreation courses. Arrangements under the direction of chairman.

202. **Philosophy of Recreation.** II, S. 3 hr. PR: Consent. Interpretation of recreation as a basic part of the living process; importance to individual community, and national welfare; social and economic significance.

204. **Recreation Hobbies.** I, S. 2 hr. PR: Rec. 1 or equiv. Lecture and workshop. Value of hobbies to youth and adults; participation in various types of hobbies; methods of organization and presentation; nature and scope.

206. **Social Recreation for School-Age Groups.** II, S. 3 hr. PR: 12 hr. in Education or consent. Workshop course. Planning and conduct of social activities, parties, picnics, special events and other recreation experience adapted to home, church, and community.

265. **Leisure and Recreation.** I, S. 3 hr. PR: Consent. Study of leisure as a social phenomenon in our modern culture and its implications for recreation.

271. **Administration of Camps and Preparation of Camp Counselors.** II, S. 3 hr. PR: Rec. 11 or equiv. or consent. Principles involved in modern camping programs; organizations and administration of camps.

282. **Administration of Recreation.** I, S. 3 hr. PR: Major in recreation, or consent. General principles of administration; organization of staff administrative procedures. Study of enabling laws, legal responsibilities, surveys, finance, programs, facilities, and public relations.

290. **Outdoor Education and School Camping.** 3 hr. PR: For majors in education, recreation, extension, and forestry, or consent. Course designed to meet the needs of schools, colleges, and other education and conservation agencies interested in developing outdoor education programs. Emphasis is upon interpretation and programming of the outdoor education concept.

293. **Outdoor Recreation in Our Modern Society.** 3 hr. PR: For persons in fields of recreation, park, outdoor education and conservation, or consent. Interpretation as to what it is, what people do, where they go, how this affects our economic, social, and cultural life, and significant trends.

SAFETY EDUCATION

127. **Accident Prevention and First Aid.** I, II. 2 hr. Standard and advanced first aid as outlined by the American Red Cross.

181. **Principles of Safety Education.** I, II, S. 2 hr. Introductory course. Basic principles of safety education and accident prevention. Deals with the development of the safety movement and its place in education.

182. **Techniques and Procedures in Driver and Traffic Safety Education.** II, S. 3 hr. PR: Safety Ed. 181 or equiv., or 6 hr. of Education and valid driver's license. A basic course designed to prepare teachers of driver education; includes supervised practice-driving-instruction (laboratory arranged).

280. **Programs in Safety Education.** I, II, S. 3 hr. PR: Graduate standing and consent. Planning programs, methods and materials for offering instructional programs in safe living in school, home, travel, industry, physical education, athletics, and recreation.

281. **Driver and Traffic Safety Education Programs.** II, S. 3 hr. PR: Graduate standing and consent. Philosophy, objectives, new and advanced equipment, methods and materials in driver and traffic safety education; program planning, and evaluative techniques in schools and adult programs. Includes laboratory with various methods, materials, and instructional techniques.

282. **Problems in Driver and Traffic Safety Education.** I, II, S. 3 hr. PR: Graduate standing and consent. Advanced course. Individual problems encountered in teaching driver and traffic safety education. Examination of existing courses of study, research and supervisory and evaluative practices.

283. **Philosophy of Safety Education.** I, II, S. 3 hr. PR: Graduate standing and consent. Study of the place of safety education in modern living; philosophies of safety education as expounded by leaders in the field; emphasis on accident causation and accident prevention in various areas of safety; and research implications.

THE CLASSIFIED ENROLLMENT

A. The Summer Session, 1966

Colleges and Schools	Senior			Junior			Sophomore			Freshman			Total			Special			Grand Total		
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
Agriculture and Forestry	61	2	63	56	3	59	36	1	37	17	.....	17	170	6	176	.....	.....	.....	170	6	176
Arts and Sciences	106	48	154	145	63	208	127	83	210	80	87	167	458	281	739	50	40	90	508	321	829
Commerce	50	3	53	17	.....	17	.....	.....	.....	.....	.....	.....	67	3	70	.....	.....	.....	67	3	70
Creative Arts Center	11	12	23	10	14	24	11	19	30	8	6	14	40	51	91	.....	1	1	40	52	92
Dental Hygiene	.....	1	1	.....	2	2	.....	1	1	.....	.....	.....	.....	4	4	.....	.....	.....	.....	4	4
Engineering	56	.....	56	58	.....	58	69	.....	69	52	.....	52	235	.....	235	.....	.....	.....	235	.....	235
Graduate	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,522	740	2,262	199	180	379	1,721	920	2,641
Human Resources and Education	53	117	170	14	79	93	1	7	8	.....	5	5	68	208	276	3	4	7	71	212	283
Journalism	22	12	34	8	2	10	.....	.....	.....	.....	.....	.....	30	14	44	.....	.....	.....	30	14	44
Medical Technology	1	9	10	.....	9	9	.....	.....	.....	.....	.....	.....	1	18	19	.....	.....	.....	1	18	19
Mines	3	.....	3	9	.....	9	9	.....	9	.....	.....	.....	21	.....	21	.....	.....	.....	21	.....	21
Nursing	.....	1	1	.....	3	3	.....	51	51	.....	1	1	.....	56	56	.....	8	8	.....	64	64
Physical and Health Education, Recreation and Safety	40	20	60	16	10	26	7	10	17	2	11	13	65	51	116	.....	.....	.....	65	51	116
Kanawha Valley Center	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Parkersburg Branch	1	.....	1	1	8	9	8	8	16	8	1	9	18	17	35	12	23	35	30	40	70
TOTAL	404	225	629	334	193	527	268	180	448	167	111	278	2,695	1,449	4,144	264	256	520	2,959	1,705	4,664

	4th Year			3rd Year			2nd Year			1st Year			Total			Special			Grand Total		
Dentistry	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	1	.....	1
Law	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Medicine	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pharmacy	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	1	1	.....	.....	.....	.....	1	1
TOTAL	.....	.....	.....	1	.....	1	.....	1	1	.....	.....	.....	1	1	2	.....	.....	.....	1	1	2
GRAND TOTAL	404	225	629	335	193	528	268	181	449	167	111	278	2,696	1,450	4,146	264	256	520	2,960	1,706	4,666

B. The First Semester (September to December), 1966-67

Colleges and Schools	Senior			Junior			Sophomore			Freshman			Total			Special			Grand Total		
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
Agriculture and Forestry	120	3	123	175	10	185	190	10	200	160	6	166	645	29	674	2		2	647	29	676
Arts and Sciences	298	128	426	664	252	916	899	553	1,452	895	819	1,714	2,756	1,752	4,508	40	80	120	2,796	1,832	4,628
Commerce	169	7	176	94	4	98							263	11	274	1		1	264	11	275
Creative Arts Center	25	25	50	41	35	76	47	64	111	34	82	116	147	206	353				147	206	353
Dental Hygiene		12	12		16	16		18	18	1	24	25	1	70	71				1	70	71
Engineering	154		154	271	2	273	366	4	370	396	6	402	1,187	12	1,199				1,187	12	1,199
Graduate													1,357	449	1,806	183	97	280	1,540	546	2,086
Human Resources and Education	86	192	278	67	287	354	5	115	120	2	93	95	160	687	847		2	2	160	689	849
Journalism	30	16	46	54	23	77							84	39	123				84	39	123
Medical Technology	1	18	19	2	23	25							3	41	44				3	41	44
Mines	6		6	23		23	26		26	17		17	72		72	1		1	73		73
Nursing		21	21		50	50		52	52		7	7		130	130		14	14		144	144
Physical and Health Education, Recreation and Safety	84	34	118	102	42	144	85	64	149	54	60	114	325	200	525				325	200	525
Kanawha Valley Center													61		61	9		9	70		70
Parkersburg Branch		2	2	5	8	13	88	22	110	68	40	108	161	72	233	17	26	43	178	98	276
TOTAL	973	458	1,431	1,498	752	2,250	1,706	902	2,608	1,627	1,137	2,764	7,222	3,698	10,920	253	219	472	7,475	3,917	11,392

	4th Year			3rd Year			2nd Year			1st Year			Total			Special			Grand Total		
Dentistry	38		38	45	3	48	51		51	56		56	190	3	193				190	3	193
Law				54	6	60	47	4	51	64	3	67	165	13	178				165	13	178
Medicine	40	8	48	57	4	61	57	4	61	57	5	62	211	21	232				211	21	232
Pharmacy				29	12	41	34	6	40	43	5	48	106	23	129				106	23	129
TOTAL	78	8	86	185	25	210	189	14	203	220	13	233	672	60	732				672	60	732
GRAND TOTAL	1,051	466	1,517	1,683	777	2,460	1,895	916	2,811	1,847	1,150	2,997	7,894	3,758	11,652	253	219	472	8,147	3,977	12,124

C. The Second Semester (January to May), 1966-67

Colleges and Schools	Senior			Junior			Sophomore			Freshman			Total			Special			Grand Total		
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
Agriculture and Forestry	119	3	122	170	7	177	170	8	178	127	5	132	586	23	609	1	.....	1	587	23	610
Arts and Sciences	288	141	429	553	211	764	827	518	1,345	743	704	1,447	2,411	1,574	3,985	42	74	116	2,453	1,648	4,101
Commerce	167	4	171	121	4	125	.....	.....	.....	.....	.....	.....	288	8	296	.....	.....	.....	288	8	296
Creative Arts Center	26	24	50	34	36	70	48	51	99	30	68	98	138	179	317	.....	.....	.....	138	179	317
Dental Hygiene	.....	12	12	.....	16	16	.....	18	18	.....	24	24	.....	70	70	.....	.....	.....	.....	70	70
Engineering	156	.....	156	263	2	265	290	4	294	319	4	323	1,028	10	1,038	1	.....	1	1,029	10	1,039
Graduate	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,324	428	1,752	157	98	255	1,481	526	2,007
Human Resources and Education	105	217	322	72	289	361	5	112	117	3	101	104	185	719	904	.....	5	5	185	724	909
Journalism	37	19	56	45	24	69	.....	.....	.....	.....	.....	.....	82	43	125	.....	.....	.....	82	43	125
Medical Technology	1	18	19	2	23	25	.....	.....	.....	.....	.....	.....	3	41	44	.....	.....	.....	3	41	44
Mines	8	.....	8	16	.....	16	21	.....	21	10	.....	10	55	.....	55	.....	.....	.....	55	.....	55
Nursing	.....	22	22	.....	46	46	.....	44	44	.....	2	2	.....	114	114	.....	13	13	.....	127	127
Physical and Health Education, Recreation and Safety	80	33	113	98	50	148	66	50	116	55	65	120	299	198	497	1	.....	1	300	198	498
Kanawha Valley Center	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	58	.....	58	20	1	21	78	1	79
Parkersburg Branch	2	1	3	11	9	20	73	31	104	54	47	101	140	88	228	.....	.....	.....	140	88	228
TOTAL	989	494	1,483	1,385	717	2,102	1,500	836	2,336	1,341	1,020	2,361	6,597	3,495	10,092	222	191	413	6,819	3,686	10,505
	4th Year			3rd Year			2nd Year			1st Year			Total			Special			Grand Total		
Dentistry	38	.....	38	46	3	49	50	.....	50	52	.....	52	186	3	189	.....	.....	.....	186	3	189
Law	.....	.....	.....	55	5	60	45	4	49	59	3	62	159	12	171	.....	.....	.....	159	12	171
Medicine	40	8	48	56	4	60	57	4	61	57	5	62	210	21	231	.....	.....	.....	210	21	231
Pharmacy	.....	.....	.....	30	12	42	32	6	38	38	5	43	100	23	123	.....	.....	.....	100	23	123
TOTAL	78	8	86	187	24	211	184	14	198	206	13	219	655	59	714	.....	.....	.....	655	59	714
GRAND TOTAL	1,067	502	1,569	1,572	741	2,313	1,684	850	2,534	1,547	1,033	2,580	7,252	3,554	10,806	222	191	413	7,474	3,745	11,219

D. The Academic Year (September to May), 1966-67

Colleges and Schools	Senior			Junior			Sophomore			Freshman			Total			Special			Grand Total		
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
Agriculture and Forestry	152	4	156	184	10	194	192	9	201	149	6	155	677	29	706	1		1	678	29	707
Arts and Sciences	341	162	503	641	232	873	951	569	1,520	820	750	1,570	2,753	1,713	4,466	49	103	152	2,802	1,816	4,618
Commerce	218	7	225	127	5	132							345	12	357				345	12	357
Creative Arts Center	32	30	62	38	38	76	51	64	115	32	75	107	153	207	360				153	207	360
Dental Hygiene		12	12		16	16		18	18		25	25		71	71					71	71
Engineering	181		181	285	2	287	335	4	339	344	4	348	1,145	10	1,155	1		1	1,146	10	1,156
Graduate													1,638	590	2,228	235	136	371	1,873	726	2,599
Human Resources and Education	116	246	362	76	305	381	5	122	127	3	107	110	200	780	980		7	7	200	787	987
Journalism	44	22	66	47	26	73							91	48	139				91	48	139
Medical Technology	1	18	19	2	23	25							3	41	44				3	41	44
Mines	9		9	22		22	27		27	13		13	71		71				71		71
Nursing		22	22		46	46		50	50		7	7		125	125		14	14		139	139
Physical and Health Education, Recreation and Safety	97	38	135	108	52	160	79	55	134	62	66	128	346	211	557	1		1	347	211	558
Kanawha Valley Center													80		80	22	1	23	102	1	103
Parkersburg Branch	2	1	3	13	11	24	91	36	127	73	56	129	179	104	283	12	12	24	191	116	307
TOTAL	1,193	562	1,755	1,543	766	2,309	1,731	927	2,658	1,496	1,096	2,592	7,681	3,941	11,622	321	273	594	8,002	4,214	12,216
	4th Year			3rd Year			2nd Year			1st Year			Total			Special			Grand Total		
Dentistry	39		39	46	3	49	50		50	55		55	190	3	193				190	3	193
Law				56	6	62	45	4	49	63	3	66	164	13	177				164	13	177
Medicine	41	8	49	56	4	60	57	4	61	57	5	62	211	21	232	1		1	212	21	233
Pharmacy				30	12	42	33	6	39	41	5	46	104	23	127				104	23	127
TOTAL	80	8	88	188	25	213	185	14	199	216	13	229	669	60	729	1		1	670	60	730
GRAND TOTAL	1,273	570	1,843	1,731	791	2,522	1,916	941	2,857	1,712	1,109	2,821	8,350	4,001	12,351	322	273	595	8,672	4,274	12,946

E. The Summary for 1966-67

Colleges and Schools	Senior			Junior			Sophomore			Freshman			Total			Special			Grand Total		
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
Agriculture and Forestry	167	4	171	188	10	198	197	9	206	155	6	161	707	29	736	1	.....	1	708	29	737
Arts and Sciences	366	173	539	654	241	895	966	576	1,542	827	761	1,588	2,813	1,751	4,564	87	128	215	2,900	1,879	4,779
Commerce	233	8	241	129	5	134	.....	.....	.....	.....	.....	.....	362	13	375	.....	.....	.....	362	13	375
Creative Arts Center	35	34	69	40	39	79	51	67	118	33	75	108	159	215	374	.....	1	1	159	216	375
Dental Hygiene	.....	12	12	.....	16	16	.....	18	18	.....	25	25	.....	71	71	.....	.....	.....	.....	71	71
Engineering	195	.....	195	292	2	294	339	4	343	350	4	354	1,176	10	1,186	1	.....	1	1,177	10	1,187
Graduate	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,530	1,095	3,625	391	294	685	2,921	1,389	4,310
Human Resources and Education	137	288	425	79	311	390	5	123	128	3	107	110	224	829	1,053	2	10	12	226	839	1,065
Journalism	51	23	74	47	27	74	.....	.....	.....	.....	.....	.....	98	50	148	.....	.....	.....	98	50	148
Medical Technology	1	18	19	2	23	25	.....	.....	.....	.....	.....	.....	3	41	44	.....	.....	.....	3	41	44
Mines	10	.....	10	23	.....	23	28	.....	28	13	.....	13	74	.....	74	.....	.....	.....	74	.....	74
Nursing	.....	22	22	.....	46	46	.....	55	55	.....	7	7	.....	130	130	.....	17	17	.....	147	147
Physical and Health Education, Recreation and Safety	110	43	153	110	52	162	81	57	138	63	69	132	364	221	585	1	.....	1	365	221	586
Kanawha Valley Center	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	80	.....	80	22	1	23	102	1	103
Parkersburg Branch	2	1	3	13	13	26	92	39	131	73	56	129	180	109	289	21	31	52	201	140	341
TOTAL	1,307	626	1,933	1,577	785	2,362	1,759	948	2,707	1,517	1,110	2,627	8,770	4,564	13,334	526	482	1,008	9,296	5,046	14,342

	4th Year			3rd Year			2nd Year			1st Year			Total			Special			Grand Total		
Dentistry	39	.....	39	46	3	49	50	.....	50	55	.....	55	190	3	193	.....	.....	.....	190	3	193
Law	.....	.....	.....	56	6	62	45	4	49	63	3	66	164	13	177	.....	.....	.....	164	13	177
Medicine	41	8	49	56	4	60	57	4	61	57	5	62	211	21	232	1	.....	1	212	21	233
Pharmacy	.....	.....	.....	30	12	42	33	6	39	41	5	46	104	23	127	.....	.....	.....	104	23	127
TOTAL	80	8	88	188	25	213	185	14	199	216	13	229	669	60	729	1	.....	1	670	60	730
GRAND TOTAL	1,387	634	2,021	1,765	810	2,575	1,944	962	2,906	1,733	1,123	2,856	9,439	4,624	14,063	527	482	1,009	9,966	5,106	15,072

E. (Continued)—Extension, Short Courses, and Conferences

UNIVERSITY EXTENSION OF COLLEGIATE GRADE:	Men	Women	Total
University Extension of Collegiate Grade (not counted elsewhere)	1,186	1,606	*2,792
University Resident Enrollment	9,966	5,106	15,072
Total University Enrollment of Collegiate Grade	11,152	6,712	17,864

*This number represents those persons enrolled only in extension courses of collegiate grade.

CONFERENCES:			
Adult Education Institute			300
Allegheny Section of the American Society of Foresters			100
Annual AFL-CIO Labor Institute			100
Appalachian Center Visiting Committee			50
Appalachian Regional School for Church Leaders			100
Appalachian Wood Utilization Extension Workers Committee			30
Art Camp			60
Awareness and Leadership Conference			30
Clothing Workshop			150
Conservation Workshop			50
Consumer Education Day			150
Dow Chemical Study Tour			20
Economic Workshop			50
Educational Research Training Workshop			32
Farming Management			20
Fine Arts Music Camp			200
Forced Warm Air Heating and Cooling			75
Forestry Workshop for Vocational Agricultural Teachers			30
Governor's Industrial Conference			400
Headstart Orientation			1,000
Headstart Professional Orientation			25
Headstart 8-Week Program			50
High School Drama Festival and Forensic League			300
Homecare Planning			45
Horticulture Workshop			25
Hospital Food Service			25
Infection Control in Hospitals			125
Insurance Workshop			30
Journalism Workshop			25
Junior Science and Humanities Symposium			200
Leadership in Nursing Supervision and Administration			28
Light Gauge Steel Institute			40
Manpower Conference			200
Morgantown Area Appalachian Center Staff Conference			60
Music and Computer			50
NDEA Language Institute			60
NDEA Reading Institute			60
N. E. Regional Meeting of American Association of Agricultural College Editors			60

E. (Continued)—Extension, Short Courses, and Conferences

	Men	Women	Total
New Concepts on Techniques of Root Canal Therapy			20
New Workers Induction Training Program			30
Northern Loggers Conference			300
Nuclear Education Day			400
Nurses' Workshop			150
Nursing Supervision and Administration			30
Nursing Team in Home Care Program			45
O. E. O. Reading Institute			60
O. E. O. Training Conference			100
O. E. O. Union Leadership Training for Community Action			100
Physical Education for Mentally Retarded			39
Plumbers' Conference			75
Red Cross Workers			35
Sheep Production			100
South Atlantic Section, Air Pollution Control Association			50
State Vocational Agriculture Judging Contest			400
West Virginia Bandmasters Meeting			40
West Virginia Sports Association			350
Workshop for Student Library Assistants			100
World Affairs Institute			400
Total			7,179
EXTENSION: (Non-Collegiate Grade)			
Coal Preparation			12
Total			12
SHORT COURSES AT MORGANTOWN:			
Appalachian Gas Measurement Short Course			500
Appalachian Underground Corrosion Short Course			720
Feed Servicemen's Short Course			.....
Waste Water Treatment Short Course			75
Total			1,295
GRAND TOTAL			26,350

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